March 1959 • Volume 58 • Number 3

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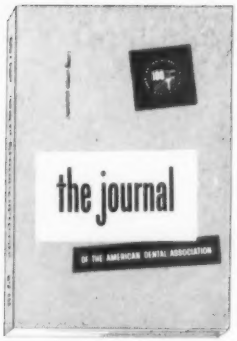

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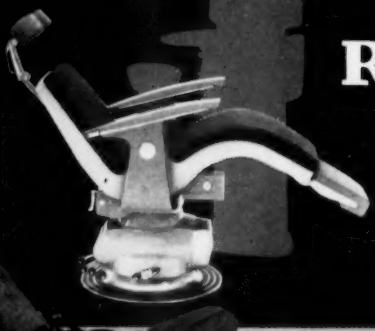

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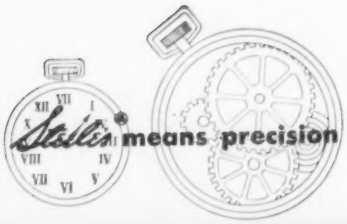

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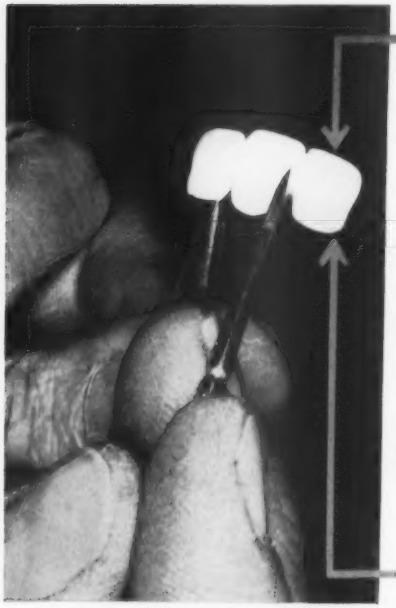

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A symposium on programs affecting relations between the dental profession and the dental laboratory group

A symposium on programs affecting relations between the dental profession and the dental laboratory group was presented September 29-30, 1958, at the Association's Central Office, by the Council on Dental Trade and Laboratory Relations. The symposium was attended by more than 90 persons representing a substantial number of constituent dental societies, the larger component dental societies, state dental examining boards and the National Association of Dental Laboratories.

Among the topics discussed were the education and certification of dental laboratory technicians, the accreditation of commercial dental laboratories, the activities of the self-styled "public denturists" and the statutory recognition of commercial dental laboratories and dental laboratory technicians.

Space does not permit the publication of all of the excellent papers which were given at the two-day conference. However, because of the wide interest in dental laboratory legislation, THE JOURNAL hastens to publish in this issue four of the articles dealing specifically with this phase of the subject. They are:

"The History and Philosophy of Occupational Licensing Legislation in the United States" by William L. Frederick, Ph.D., eastern representative, The Council of State Governments;

"The Judicial View of Occupational Licensure" by William M. Trumbull, J.D., professor of law, Northwestern University;

"The Policy of the American Dental Association on the Licensure or Registration of Commercial Dental Laboratories and Dental Laboratory Technicians" by J. Fred Folley, Jr., chairman of the Council on Dental Trade and Laboratory Relations of the American Dental Association;

"The Dental Laboratory Viewpoint" by Homer Dickson, immediate past president, National Association of Dental Laboratories.

Several of the remaining conference papers will be published as reports of the Council on Dental Trade and Laboratory Relations in future issues of THE JOURNAL.

At the 99th annual session of the Association in Dallas, the House of Delegates directed the Council on Dental Trade and Laboratory Relations "to study and evaluate present Association policy opposing the adoption by state legislatures of licensure and registration measures for dental laboratories and dental laboratory technicians and report its findings to the House of Delegates in 1959." The House further urged that "in the interim, no additional legislation be introduced or supported by constituent dental societies that would require the registration or licensure of dental laboratories or dental laboratory technicians."

It is hoped that the four articles presented in this issue, plus others scheduled for early issues of THE JOURNAL, will be helpful to state dental societies in the formulation of their policies on the subject.

THE HISTORY AND PHILOSOPHY OF OCCUPATIONAL LICENSING LEGISLATION IN THE UNITED STATES

William L. Frederick, Ph.D., New York

The origins of our present day professional and occupational licensing systems are found in Europe in the Middle Ages. From the guilds which flourished in medieval times, there is a clear line of descent to our modern licensing practices. This is not to say that licensing today is a reincarnation of the guild system, but rather to suggest that current licensing practices and organization serve some of the same purposes and have some of the same features which were developed initially through the guild system.

The first guilds were organized by merchants in the cities and towns as early as the twelfth century. They reflected the vocational framework of the period and were an early outgrowth of the revival of trade after the so-called Dark Ages. Their basic purpose was to protect the economic interests of their members, though they also served as a means of providing some protection against economic and trade practices which would be harmful to the community. The guilds received legal recognition by municipal authorities including the right to restrict membership and to regulate trade among various communities.

The merchant guilds tended to become quite exclusive bodies, the members of which enjoyed considerable wealth and social prestige. Naturally they guarded their privileged status by carefully limiting their membership and by refusing to admit persons from different segments of the economy. The result was the formation of new types of guilds consisting of free artisans who practiced the several crafts which developed or were revived during this period.

The new guilds were organized along craft lines and like the earlier groups had as their major purposes the protection of the economic interests of their members. They instituted a system of self-regulation, governing prices, wages, hours, working conditions and other aspects of

Eastern representative, The Council of State Governments.

the manufacture and sale of their products. They inaugurated a training system involving apprentices, journeymen and master craftsmen. As is the case with some similar arrangements today, this form of organization served two purposes. It offered the public some assurance that persons entering a craft would receive adequate training. At the same time, it frequently was used to reduce competition by limiting the number of master craftsmen.

The interests of the craft guilds were sometimes diametrically opposed to those of the merchant guilds. The older groups frequently controlled the governing bodies of the cities, but in time, the growth of the crafts forced a sharing of power. When this occurred, the craft guilds too were able to use the authority of government to implement and support their own codes and regulations.

The professional guilds were the third form of vocational organization prominent in medieval times. Once bound to the church, the professions were freed from religious domination by the growing secularization of society; by the sixteenth century, professional organizations emerged along guild lines. Medicine, law and teaching were the major professions of the period. Their members received formal training in the universities, a fact which distinguished them from members of the other guilds. The professional guilds helped to insure that persons entering the professions had adequate training, and they often participated in the training process. Also, they sought to limit the right to practice a profession to persons who were members of the guild.

The vast power of the guilds—economic, political and social—could not prevent their eventual dissolution. The impact of the Commercial Revolution and the rise of national governments in western Europe contributed to the end of the guild system. Changes in industrial and commercial processes and the shifting of political power from the cities to the national states took away much of the power of the guilds. Though they continued to exist in many places, the guilds largely lost the lofty position they had once held.

This brief historical sketch provides the background against which the development of licensure in the United States can be traced. The pattern which emerges includes elements of the European guild system modified by the vastly different conditions of colonial society in early America and eventually modified still further by the economic, political and social changes which have produced the contemporary United States.

CRAFTS AND PROFESSIONS IN COLONIAL AMERICA

In colonial America, the craft guilds never achieved a solid base. Already declining in importance in Europe, they were hampered in the colonies by the trade restrictions imposed by England. Moreover, the great shortage of skilled artisans and the agrarian nature of colonial society made it extremely difficult to regulate production. The demand for workers was so great that the old apprentice-journeyman system could not be maintained. The colonial governments made some effort to regulate the crafts in accordance with English and European practice, but the laws were not enforced stringently.

In the professions, the situation was quite different, though here too, old practices and traditions had to be modified. The early colonists regarded university training as essential for the professions, but the colleges they established provided training primarily for the ministry. There was neither a medical college nor a law school in America until after the middle of the eighteenth century. Some university-trained doctors and lawyers came to the colonies; the sons of some colonists were sent to England or the Continent for training, but the total number from

both sources was insufficient to meet the needs. Hence, a system of apprenticeship training for the professions was established.

It appears that medicine suffered more than other professions from the lack of university training facilities in the colonies. The apprenticeship system seems to have resulted in a less skilled group of doctors each generation. By 1800, it is estimated that only about 10 per cent of the doctors in the colonies had received their training in universities. Under these conditions it is no wonder that a demand grew for regulation of the practice of medicine by the state. As early as 1639, Virginia had enacted a statute concerning medical practice, in part as a result of complaints about excessive fees. Later, attention was focused on standards of practice, and in 1736, Virginia revised its act to permit doctors with university training to charge higher fees than those trained under the apprentice system. This was an attempt to provide a financial reward for better training, but there was still no ban to prevent the poorly trained individual from practicing.

General medical practice acts came in the colonies only after the establishment of state and local medical societies. This relationship also prevailed in other professions where newly organized professional associations worked diligently for regulation of the standards of practice in their fields. The oldest existing state medical society was organized in New Jersey in 1766, and six years later that colony passed the first comprehensive medical practice act. By 1800 13 of the 16 states had passed general medical practice acts, and all but the New Jersey law gave the state medical society the power to examine and license applicants who desired to practice medicine.

The legal profession got off to a somewhat shaky start in the colonies. There were few lawyers, and the practice of law was regarded with disfavor. Some colonies passed laws limiting the functions and role of lawyers. However, these conditions soon changed and by 1750, the law was firmly established as a professional calling. However, the lack of any law schools in the colonies meant that persons aspiring to become lawyers either had to go abroad for their education or serve as an apprentice in a lawyer's office.

Because of the lawyer's special role as an officer of the court, regulations governing the practice of law developed at an early date. In some colonies, lawyers could be admitted to practice only by the action of the legislature or royal governor. In most colonies, admission to practice was governed by each local court. Naturally, there were variations in admissions standards, not only among the colonies, but also within those which vested the admitting power in their local courts. Bar associations successfully worked for uniformity within these colonies and generally sought to obtain higher standards of admission. Partly as a result of their efforts, six states by 1800 required applicants to pass state examinations prior to admission to the bar.

During the colonial period, the certifying of teachers was a decentralized process which varied widely from colony to colony and from town to town. There were few if any objective standards and apparently no written examinations. The subjective judgments of local officials and often of the clergy determined whether a teacher obtained and retained a certificate. Moral character, and during the Revolution, political loyalty, were likely to be as important as knowledge of subject matter and teaching ability in determining whether a prospective teacher would receive a license.

PROFESSIONAL LICENSURE IN THE NINETEENTH CENTURY

At the beginning of the nineteenth century in the United States, professional licensing seemed to be well established. Medicine and the law were recognized by

statute, and numerous new professions were obtaining an identity of their own. The trends all seemed to be in the direction of increased regulation of the professions by their own associations with the legal support of the states.

Then beginning about 1820, the picture changed. State laws restricting the practice of law and medicine began to be repealed or to be amended out of existence. By 1850, there were almost no regulations governing the practice of medicine in any of the states and only very loose rules pertaining to admission to the bar. Almost anyone could enter these fields with little regard to training or experience. The inevitable result was a considerable decline in professional standards and in the knowledge and skills of practitioners.

What brought about this reversal of policy with respect to professional licensure? In the study of licensing which the Council of State Governments made several years ago, several causative factors were suggested. They were:

1. A growing spirit of democracy and individualism permeated the environment of the nineteenth century.

2. Government supported the demand for greater economic freedom by the application of *laissez faire* to the development of our resources and industry.

3. A growing and expanding population demanded more doctors. Meantime, inadequately equipped schools and the rise of dubious medical sects led to bickering between "regulars" and "irregulars" in medicine which destroyed professional solidarity.

4. In law a centralized machinery of admission was not adaptable to large and sparsely settled areas; the decentralized system tended to lower the standards of admission.[1]

During the second half of the nineteenth century, another reversal of public attitudes and policy toward licensing took place. Some of the factors which caused licensing laws to be repealed a few years earlier were no longer as important. Moreover, incompetence, quackery and dishonesty in the professions were becoming more and more common, and as a result, there was a new awareness of the need for professional standards. Finally, about mid-century, several national professional associations were formed, and they pressed vigorously for the adoption of licensing acts. In 1847, the American Medical Association was established, and national professional organizations were created in pharmacy and civil engineering in 1852 and in architecture in 1857. In 1859, the American Dental Association was formed.

These various factors led to a new wave of licensing legislation in the states. By 1900, the older professions were governed by licensing laws in all or practically all the states. Many of the newer professions likewise secured the adoption of laws, regulating practice in their areas. In most instances, the licensing laws provided for a large measure of self-government for the professions and in some cases, the organized profession was given a definite role in the licensing process.

OCCUPATIONAL REGULATION IN THE TWENTIETH CENTURY

The trend toward licensing of more and more professions and trades continued into the twentieth century and is still evident today. At the present time, there are at least 75 occupations for which licenses are required in one or more states. In at least 14 fields, all states require practitioners to obtain licenses. The number of licensing statutes is well over 1,200 and the number is growing as additional groups successfully demand that they too be given the protection of a license issued by the state. For the most part, each of these licensing laws creates an inde-

1. The Council of State Governments. Occupational licensing legislation in the states. Chicago. The Council of State Governments, 1952, p. 19.

pendent licensing board composed of members of the profession subject to the particular law. This board administers the act and within the statutory limitations, it regulates the profession and is the licensing authority in the state. The boards; the hundreds of laws creating them; the regulations and procedures which they enforce; the professional associations which work closely with the boards and which have their own codes of ethics; the colleges and universities which educate people for the professions and which often are subject to accreditation by the boards—all of these complicated and interrelated agencies and rules constitute professional licensure as we know it today in the United States.

QUERIES ON MODERN DAY LICENSURE

This brief description of the history of the development of professional licensing and the few comments I have made about the extent of licensing today provide a basis for raising some questions about licensure and the relationships involved between government and the professions in the licensing process. Why do we have a system of licensure? What interests and values does it seek to protect and serve? How effectively does it fulfill these goals? Are there some major problems and shortcomings in our present licensing processes? What criteria can a legislature employ in determining whether a particular profession or occupation should be licensed?

Obviously, these are all questions which could be discussed at great length. I will only discuss each of them briefly in an effort to suggest some partial answers and to encourage reflection on these questions.

Purpose of Licensure • We have a system of licensure because various organized groups believe it is beneficial to their members and to the general public to have such a system and because these groups have convinced public officials of the need for licensing. This is an oversimplification, but I believe it is basically an accurate statement. Unlike regulations of most other parts of the economy, licensing has not been imposed over the vehement objections of the group to be licensed. Just the opposite; it usually has been granted by the state in answer to the express desires of the group or at least the organized portion of the group. It is this fact which helps to explain the great spread of licensing, its extension to more and more fields of work.

There can be no doubt that licensing protects the interests of a profession. It aids in the establishment of standards, helps to keep incompetents out of the field and assists in the enforcement of codes of practice. All of these are legitimate professional goals. While a profession may strive to achieve them through voluntary means, the availability of the police power of the state is a most useful additional weapon. In addition, licensing may help to solidify a profession by increasing an individual's sense of belonging to a specific area of endeavor. Finally, licensing may add to the economic power of those working in a particular field.

Of course, licensing serves more than these professional interests; it also protects the interests of the general public. This is the legal basis for licensing, for such legislation may be justified only if it protects the health, safety or welfare of the people. As far as the major professions are concerned, there is no doubt that licensing fulfills this public purpose. It assures the public of at least minimum standards of competence and practice. The interests of the profession and the public in maintaining high standards coincide to a large extent, and the process of licensure helps to protect this mutual interest.

Effectiveness of Licensure • The next question which I posed previously con-

cerned the effectiveness of the licensing process in realizing its various purposes and goals. I think it is clear that licensing assists a group in achieving a professional or occupational identity. It helps to define the boundaries of a profession or skill and says that the application of knowledge within these boundaries is part of a specific profession. I believe also that licensing may help individuals to achieve greater financial compensation for their work, though this result may be more easily demonstrated in some of the fields subject to licensing than in others. But these goals, though they are important to individuals and small groups, are secondary to the basic purpose of licensing. The important question is: How effectively does licensing protect the public interest, the public health, safety and welfare?

I have said already that licensing has helped greatly to raise and maintain standards and thus to protect the interests of the public. This achievement is due not only to the provisions of licensing statutes which establish basic qualifications, but even more it is a result of the devoted service of thousands of board members and secretaries who have administered these laws. They have had the day-by-day task of attempting to maintain standards, of admitting only the well qualified to practice and of seeking to enforce standards of practice by taking appropriate action against those who violate professional codes. To fulfill these responsibilities, boards must have the resources and the time to examine and test applicants satisfactorily and the means to enforce standards of practice effectively and equitably. To the extent that boards lack adequate examining and enforcing machinery, licensing fails to provide the public with the protection to which it is entitled and which it expects.

Of course, boards are not solely responsible for the success or failure of licensing in achieving this public purpose. Some provisions of licensing statutes relating to qualifications for practice are arbitrary and restrictive in nature. Their purpose appears to be to limit practice in a field rather than to establish reasonable standards. A common example of such restrictions are provisions pertaining to the licensing of persons coming from other states who already are licensed and have practiced in their original states. Some licensing laws make no provision for recognizing licenses issued by other states. Others require an applicant already licensed elsewhere to take additional training, or to submit to a full examination process, or to pay a very high fee for endorsement.

Licensing legislation of this type does not serve the public interest so much as it protects the interests of those already practicing within the state. The increasing mobility of our population makes these barriers more and more serious and more and more detrimental to the best interests of the public.

Professional associations also have a key role in determining the extent to which the licensing process realizes its basic public purpose. The associations not only are the voice of the regulated; they also have close and continuing ties with the regulatory process. Some licensing laws afford special recognition to the professional association in the field involved. In fact, almost all licensing laws are based on the theory that the professional associations concerned will actively support the licensing program. The judgments, values and policies of professional associations are likely to be reflected in the statutes and in their administration by licensing boards. These relationships between the professional societies and the licensing process are tolerable insofar as the associations are able to represent the broad interests of the public. Fortunately, they appear to do so on most occasions. But where there is a divergence of interests between those of the profession and those of the public, then the interests of the profession will almost surely be domi-

nant. When this type of situation develops, licensure falls short of fulfilling its public objectives.

Yardsticks Used in Evaluating Licensure Proposals • The final question I posed earlier concerns the criteria which legislators may apply in determining whether to extend the licensing system to additional professions and occupations. This is a decision which must be made in almost every session of a state legislature, for there are always new groups clamoring for the adoption of a licensing law to cover their fields. It is a difficult decision to make, because it requires a balancing of values and because the proponents are organized and vociferous, the opponents are usually few in number and the general public generally does not even know that a licensing bill is being considered by the legislature. Under such circumstances, the legislator must represent the public's interest and attempt to determine whether that interest will be served by the proposed licensing bill.

The first criterion I would suggest is a clear showing that the need to protect the public health, safety or welfare is so vital as to justify further restrictions on an individual's choice of an occupation. Licensing legislation obviously imposes restrictions on occupational choice and to this extent limits one of the freedoms of a free economy. We accept many types of limitations upon our freedoms and we recognize the right of government to impose them, but we should always insist that such limitations meet a strict test of necessity rather than one of convenience. They cannot be justified merely because they promote the objectives of a group, no matter how desirable these objectives may be, but only if they are necessary to protect the interests of the public.

A second criterion which a legislator might apply is the extent to which the profession or occupation seeking licensure can be delineated as a separate and distinct area of work. Although the very act of licensing may help to draw such distinctions, there must be some clear boundaries prior to licensing. The members of the group must be able to agree on a definition of what is encompassed by their work. A definition which is too narrow will not achieve the objectives desired; one which is too broad will restrict the work of persons in other fields. Here the relationships among professions are important and should be considered when it is proposed to extend licensing to a new field.

Third, a legislator may inquire about the organized association in the field, its relationship to the profession or occupation as a whole and its ability to assume some of the obligations of the licensing process. Given the type of licensure we have traditionally had in the United States, the attitudes and abilities of the association may determine whether licensing will serve the public interest. Since most licensing laws involve a direct or indirect grant of public authority to a private group, a legislature should be satisfied that the group is one which will exercise this power in a manner compatible with the interests of the public.

There are many other factors which legislatures need to consider before passing a licensing bill. They include the requirements for training and experience, the provisions for examinations of applicants, the enforcement sections, the provisions for reciprocity with other states and the type of organization to be created to administer the proposed act. However, these are matters of content and not general considerations of the nature of the criteria I have suggested previously.

SUMMARY AND CONCLUSION

We have a system of licensure in the United States which has evolved from the guilds of the Middle Ages. Though it has changed greatly in the process, it has retained many of the features of the old guilds.

Our licensing laws are designed to protect the public and also to serve the interests of those subject to licensing. They seek to blend the power of the state and of private organizations so that the objectives of both may be fulfilled. It is a difficult mixture to achieve under any circumstances and it becomes more and more difficult as licensing is extended to more and more fields. Ultimately, the legislature has the task of deciding the form which the mixture will take so as to insure that licensure will serve its paramount purpose—the protection of the public health, safety and welfare.

36 West Forty-fourth Street

THE JUDICIAL VIEW OF OCCUPATIONAL LICENSURE

William M. Trumbull, J.D., Chicago

Unlike the Constitution of the United States, the state constitutions do not, in general, contain enumerations of the subjects upon which the legislature may act. Instead, they contain limitations and restrictions of various kinds upon an otherwise plenary legislative power. The authority to license and regulate the practice of professions and the pursuit of occupations and to prohibit the carrying on of such activities without a license is, therefore, found in what is called the police power of the states.

The police power is said to be properly exercised for the prevention of offenses or the preservation of the public health, morals, safety or welfare. Sometimes the objectives of comfort and prosperity are added. The public health has been defined as the wholesome sanitary condition of the community at large; public safety as the protection of persons and their property; public welfare as the economic welfare, convenience and general prosperity of the community; and public morals as an aspect of the public welfare. In some states it has been thought useful to classify the professions and occupations the members of which are subjected to licensure as follows:

1. Professions involving the treatment or correction of human ailments (physicians, dentists, chiropractors, osteopathists, midwives, dental hygienists, optometrists, chiropodists and nurses).

2. Professions and trades for which public health safeguards have been established (pharmacists, veterinarians, funeral directors and embalmers, plumbers, barbers, beauty operators and dealers in various narcotics).

3. Professions and trades licensed for the protection of the public against fraud and incompetency (real estate brokers, architects, structural engineers, land surveyors, private detectives and public accountants). Lawyers, too, are licensed but usually directly by the courts under the judicial power, since lawyers are officers of the courts.

The application of the police power to licensing and regulation of professions and occupations is limited by various provisions found in most state constitutions and also by various principles generally adopted by the courts in construing those provisions. For instance, state constitutions normally provide for the separation of all powers of government into three

Professor of law, Northwestern University Law School, and member of the Illinois bar.

Citations relied on by Mr. Trumbull will be furnished on request by the Council on Dental Trade and Laboratory Relations, American Dental Association.

branches, the legislative, executive and judicial. Consequently, particularly in the older cases, the argument was frequently made, and sometimes sustained, that the promulgation of regulations, being legislative in character, could not be vested in an officer of the executive department, or even in an independent administrative agency, but must be exercised directly by the legislature, and, similarly, that the power to refuse or revoke licenses, being judicial in character, could be exercised only by the courts. Sometimes this objection has been in terms of invoking the supposed principle of nondelegability of legislative powers. In recent times, however, the courts of more and more jurisdictions have recognized the propriety of delegating quasi-legislative authority to an administrative officer or agency, if the legislature lays down sufficiently clear and detailed standards to be followed by the agency in promulgating regulations; and, similarly, the propriety of vesting in administrative officers and agencies quasi-judicial power to refuse or revoke licenses, if procedural safeguards are observed by the agency and an opportunity for judicial review is afforded. These restrictions will be considered in greater detail later, and also the implications of the usual prohibition against special legislation, which operates to require reasonable classifications for purposes of regulation.

The most effective limitation upon the exercise of the police power in this field has been found by the courts in the clauses of the federal and state constitutions prohibiting deprivation of life, liberty or property without due process of law, and guaranteeing the equal protection of the laws. Thus, a business, profession or trade has been treated as property and the right to work at a given occupation as liberty within the meaning of these provisions. This has resulted in declarations by courts such as the following:

> The rule will still hold good that regulation of a business or occupation under the police power must be based on some distinguishing feature in the business itself or in the manner in which it is ordinarily conducted, the natural and probable consequence of which, if unregulated, is to produce substantial injury to the public peace, health or welfare.

The Supreme Court of Connecticut, less than a year ago, stated the principle as follows:

> The test is whether (1) some need for serving the public health, safety or general welfare makes the regulatory legislation necessary or desirable, and (2) the legislation serves that need in a way which is not arbitrary, discriminatory and confiscatory to an unreasonable and unnecessary degree. In passing upon the need and in fashioning the method of serving it, the legislature under its police powers has a broad discretion. The limitation upon this discretion is drawn by the courts at that point where the regulatory measures either fail to serve the public good or serve it in a despotic way.

VALIDITY OF SPECIFIC REQUIREMENTS OR PROHIBITIONS

The general principles just summarized have resulted in the doctrine that the regulation must not only be for ends properly within the police power, but also must have a definite relation to the ends sought to be attained. Thus, in the case of legitimate occupations subjected to licensure, there must be free access upon proof of qualifications which in themselves must be expedient in the public interest. For example, a requirement that an applicant for a master plumber's license must submit the affidavit of a master plumber guaranteeing immediate employment was held an unreasonable restraint on access, and the period of required apprenticeship and degree of supervision by a master plumber were held arbitrary and without relation to the proper objectives of the regulation. Likewise, the definition of real estate broker to include "any person undertaking to promote the sale of real estate through the listing of such property in a publication issued primarily for such pur-

pose or for referral of information concerning properties to licensed real estate brokers or both" was held to be in excess of what was necessary to accomplish the objectives of regulation of the real estate business.

This principle has been applied in litigation challenging statutes which define the practice of dentistry to include the manufacture or repair of dental prosthetic appliances or dentures, unless prescribed by a licensed dentist and delivered to him, and which prohibit direct dealings by technicians who are not licensed dentists with members of the public. The Supreme Court of Idaho, three years ago, while conceding that reasonable standards of education, training, experience, examination and licensing of such technicians might validly be made prerequisite to the rendering of service to the public, held that it was unreasonable and unconstitutional to require such persons to be dentists as a condition to the right to sell to the public. The Supreme Court of Illinois, however, in sustaining a similar statutory definition of the practice of dentistry, said that in this restriction upon the activities of dental laboratory technicians there might be protection for members of the public who lacked the capacity to make an informed appraisal of the quality and value of the product. This latter view has found favor in other jurisdictions, including the federal courts in this circuit.

The South Carolina statute providing for the separate licensing of dental laboratory technicians, as such, does not appear to have been passed upon as yet by the courts.

PROCEDURAL DUE PROCESS AND SANCTIONS

It can be seen that the constitutional prohibition against deprivation of life, liberty or property without due process of law has frequently been invoked in challenging the substantive power to regulate and license occupations. The same clause historically, and perhaps even more so today, has another and distinct significance. Increasingly, it is being held that procedural safeguards are required both in the granting and in the revocation of licenses. It is particularly with reference to procedures on refusal or revocation of a license that these safeguards become important. The decisions of the courts are in conflict, believed to have been engendered by the confusion of cases involving the licensing of occupations not otherwise legitimate, such as gambling concessions, with cases involving the licensing of intrinsically legitimate activities. At least with respect to the latter, it now appears that refusal or revocation, as distinguished from temporary suspension of a license, must be preceded by notice to the applicant or licensee and an opportunity for a hearing on the grounds relied upon by the regulatory agency. Moreover, whether by statutory appeal or common law certiorari, there is a right to judicial review of the administrative action. In keeping with far-reaching developments in the last two decades in the theory of administrative law, remedies within the administrative agency and provisions for appeal provided by statute must be exhausted before resort to common law certiorari or injunctive relief.

The primary sanction of licensure is, of course, revocation of the license by the regulatory authority. In addition, violation of the conditions of the license or regulations to which it is subject, or the conduct of the occupation without a license, may constitute crimes of varying degrees of seriousness; and the regulatory authority may be authorized to sue in the courts for an injunction prohibiting such activities, and thereafter for the citation of violators for contempt of court. There is conflict in the decisions as to whether a licensee has a standing to sue for an injunction against a nonlicensee who is alleged to be engaged in unlawful competition with him.

COMMENT

The foregoing is, of course, only the barest thumbnail sketch of "The Judicial View of Occupational Licensure." Every part of it could, and when deemed relevant to any determination of policy must, be expanded through further research and study.

357 East Chicago Avenue

THE POLICY OF THE AMERICAN DENTAL ASSOCIATION ON THE LICENSURE OR REGISTRATION OF COMMERCIAL DENTAL LABORATORIES AND DENTAL LABORATORY TECHNICIANS

J. Fred Folley, Jr., D.D.S., New Hartford, N. Y.

The American Dental Association has assumed as one of its fundamental charter obligations the improvement of the dental health of the public. Its *Principles of Ethics*, its programs and policies have been weighed carefully to determine that they are directed toward the fulfillment of that obligation. The policy of the Association opposing licensure or registration of dental laboratories and technicians under state laws is no exception.

In adopting a firm stand that licensure or registration of the laboratory craft be disapproved, the Association's ultimate consideration was that such legislation would tend to destroy the proper relationship between profession and craft, which, in the Association's judgment, would in turn impair the quality of a vital service within the dental care program. The Association's House of Delegates has stated unequivocally the relationship that must be maintained between profession and craft to assure the best type of dental care for the public. It is expressed in the pronouncement that dental laboratories and dental laboratory technicians are to be considered "as essential adjuncts of the dental profession but in no sense as independent agencies capable of rendering a health service to the public."[1]

This relation is also recognized by the *Principles of Ethics* of the American Dental Association which state:

> The dentist has an obligation to protect the health of his patient by not delegating to a person less qualified any service or operation which requires the professional competence of a dentist. The dentist has a further obligation of supervising the work of all auxiliary personnel in the interests of rendering the best service to the patient.

When the action of the House of Delegates is read, together with the statement contained in the *Principles of Ethics*, it will be seen that the *Principles of Ethics* are not intended in any sense to depreciate the contribution made by all of the dental auxiliaries to the dental profession. The *Principles of Ethics* simply recognize and emphasize that the dentist must assume full professional responsibility for meeting the dental health needs of his patients. This responsibility cannot be delegated to or shared with a nonprofessional.

Reputable laboratory owners have, moreover, been in complete agreement with the Association's definition of the relationship that must exist between the dental profession and the dental laboratory industry and craft. A statement issued by an official of the National Association of Dental Laboratories shortly

Chairman, Council on Dental Trade and Laboratory Relations, American Dental Association.

1. Transactions, American Dental Association, 1947, p. 244.

after the formation of that association contains this comment:

> The National Association of Dental Laboratories was founded on the philosophy that the dental profession is the customer and that the dental laboratory craft may better serve its customer and improve its own standards through sound intradental public relations.

The statement is based on the N.A.D.L. bylaw provision which declares that "members shall not render, or aid others in rendering, any service directly to the general public."

The American Dental Association will continue to exert all its efforts to oppose any device that threatens to impair the proper relationship between the profession and the laboratory craft, in order that the public will be assured of the best in dental services. The Association's House of Delegates has taken the position that statutory licensure or registration of the laboratory craft does carry such a threat. In 1954 the House of Delegates adopted the following statement:[2]

> While there may be certain technical differences between registration and licensure in the legal sense, both are urged for dental laboratories and dental laboratory technicians by certain groups as legislative steps toward controlling illegal dental practice. Proponents of both programs have frequently urged that state boards, entirely apart from the state board of dental examiners, be created by such legislation. The American Dental Association opposes legislation for licensure and registration of dental laboratories and dental laboratory technicians on the following counts:
>
> 1. Licensure is traditionally reserved for those who practice a profession dedicated to the service of the public. By definition as an adjunct to the dental profession and by law in all of the states, the dental laboratory craft has no right whatever to serve the public directly.
>
> 2. The legal recognition of the dental laboratory technician in some countries of the world has led to the tacit assumption on the part of the craft and on the part of the uninformed public that dental laboratory technicians are qualified to render a direct health service to the public.
>
> 3. Most of those advocating licensure and registration have expressed an initial unwillingness to remain in an adjunctive relation with the dental profession and have urged the enactment of separate regulatory statutes quite apart from the dental practice act and separate examining boards quite apart from the state board of dental examiners. Such advocacy seems to indicate that the ultimate aim of licensure and registration legislation is dental practice by the dental laboratory technician and direct service to the public by the dental laboratory.
>
> In summary, the dental profession and the American Dental Association will not lend support to legislation basically designed to dilute the personnel of the dental profession with those not qualified to undertake an essential health service involving the well-being of millions of human beings, even though the announced purpose of such legislation is said to be in the public interest.

To say it another way—a study of the historical development of occupational licensure laws in the United States under our federal and state systems of laws indicates that statutory regulation of an occupation is justified only when it can be demonstrated that the regulation is essential to the protection of public health, safety or welfare. The Association's House of Delegates has not been convinced that there is a clear and compelling *necessity* to license or register dental laboratory technicians or commercial dental laboratories in order to protect the public health, safety or welfare.

Some members of the dental profession and some members of the dental laboratory group support their advocacy of licensure or registration of the craft on the ground that it is needed to eliminate the illegal practice of dentistry by "bootleg" dental laboratories. There appears to be a fallacy in that contention. A laboratory which performs operations which are restricted by law to licensed dentists is subject to the penalties provided in the dental practice act. At best, the laboratory registration law could include no more than a statement of sanctions already written into the dental practice act

2. Transactions, American Dental Association, 1954, p. 60–61.

or which could be written into that act by amendment. In other words, a laboratory registration law cannot of itself expand the illegality which attaches to practicing dentistry without a license. Nor could such a law provide a greater assurance than the dental practice act that its duplicate penalties could be enforced. The problems that now beset the board of dental examiners in enforcing the dental practice act against laboratories which practice dentistry would remain.

The common goal of the dental profession and the ethical, law-abiding members of the dental laboratory craft to assist in the elimination of the illegal practice of dentistry can be achieved more rapidly by mutual cooperation of the profession and craft in an effort to have the dental laws enforced against those who practice in violation of those laws. Organized dentistry recognizes the legitimate interest that reputable laboratories and technicians have in the elimination of the offensive practices conducted by the unscrupulous minority of the craft. The combined efforts and influence of the profession and the reputable members of the craft should be directed toward obtaining assurance from those responsible for enforcing the dental law that all complaints of illegal practice will be assiduously investigated, that all charges will be promptly prosecuted, and that the full penalty will be demanded where warranted.

The position of the American Dental Association opposing the licensure and registration of dental laboratory technicians and commercial dental laboratories should not be interpreted as an indication that the profession wishes to deny all forms of recognition to the members of the dental laboratory group. The adoption by the Association's House of Delegates in 1957 of "Requirements for the Approval of Educational Programs for Dental Laboratory Technicians" and "Requirements for the Approval of a Certification Board for Dental Laboratory Technicians" represents positive evidence of the profession's desire to recognize the members of the dental laboratory group and the important contribution which they make to the modern-day practice of dentistry. The support given by the Association to the education and certification programs also demonstrates the improvement in liaison and rapport between the agencies of the Association and the National Association of Dental Laboratories.

The 1958 annual report of the Council on Dental Trade and Laboratory Relations to the House of Delegates[3] concludes with this paragraph:

> It has been the policy of the Association for many years to oppose the adoption by state legislatures of licensure or registration measures for dental laboratories or dental laboratory technicians. The enactment of a dental laboratory registration law in Florida represents a significant departure from the established policy of the Association and offers an opportunity for a fresh appraisal of the Association's position on the licensing or registration of dental laboratories or dental laboratory technicians and related policies. The Council will study the matter in the light cast by the efforts of the self-styled "public denturist" group, the unionization of dental laboratory technicians, the experience gained in Europe and elsewhere in the field of dental laboratory technician regulation and the success or failure of the Florida experiment. The Council will present its recommendations in a future report.

3½ Oxford Road

3. American Dental Association. Reports of officers and councils 1958. Chicago: American Dental Association, 1958. p. 106.

THE DENTAL LABORATORY VIEWPOINT

Homer Dickson, Fort Smith, Ark.

As president of the National Association of Dental Laboratories, may I express once more the appreciation of our organization and of our industry for the work being done by the American Dental Association and its agencies in the field of dental laboratory relations. All of us who have been active in our organization are keenly aware of the work, the effort and the understanding that has gone on in the brief seven years of National Association of Dental Laboratories history.

Before this paper was prepared, I asked our national office, our National Association of Dental Laboratories Council and our component states to give me some ideas, some comments and some suggestions on the subject of licensure, legislation and regulation.

We surveyed the active people in the dental laboratory industry and particularly those who have been a part of its economic growth, planning and programing. We asked newcomers and those who had been in the field a long time, and we did not neglect laboratory men in areas where there is or has been legislation and registration. We tried to cover all elements since we wanted to develop an unbiased and analytical approach to the entire subject.

After we finished this research, we were reminded of a statement by the late Irvin Cobb, when he described a friend as having "as much sense of direction as an eggbeater." That seems to be the attitude of the dental laboratory industry insofar as licensure and registration is concerned. Some say it should be. Some say no. And there are others who do not seem to care one way or the other.

On the other hand, the program of certification is another thing entirely. It is something tangible, something definite and visible. It is a program with which dental laboratory owners and technicians have become very familiar in the last several years, and there is much to say about it later on in this paper.

LICENSURE AND REGISTRATION

I should like to make it very clear that the National Association of Dental Laboratories has taken no definite stand and has established no formal, fixed or definite policy on either licensure or accreditation. When the National Association of Dental Laboratories was organized in 1951 there was evidence of some very positive and definite feelings in various areas of the country on licensure and registration, and on that other program, accreditation. There seemed to be no middle course—one group supported one, another the opposite.

Thus the National Association of Dental Laboratories, being a federation, patterned its approach after that taken by the American Dental Association—to permit legislative action to remain at the state level. It did not oppose or endorse either philosophy. Whether or not this is good remains to be seen.

We were not surprised to learn that a great many dental laboratory operators share a feeling of opposition toward statutory regulation. If that seems strange, perhaps it should be explained that the operation of a dental laboratory is primarily a business entity, whether it has 200 men or is composed of a single operator. The dental laboratory, regardless of its size, has vested capital, has operational and regulatory problems. It has the problems of purchase and sale, the problems of business taxes, the problems of zoning

Immediate past president, National Association of Dental Laboratories.

laws, and the problems of employee-employer relationship. The dental laboratory operator is keenly aware of the fact that in some areas his colleagues have unionization, and as a result the laboratory operator-businessman has become aware of his limitations under labor laws and other regulatory functions. He must be aware of profit and loss, of accounts payable, of accounts receivable, and cost of operation. The dental laboratory operator today is constantly reminded that he is an employer who, if he is to survive, must "stay even" with the fringe benefits that other industry offers.

Thus, the general feeling of the businessman-laboratory operator appears to be that he would prefer not to have another government agency regulating him and dominating his business. There should be no misunderstanding: the ethical operator has every respect for regulation. However, the businessman recognizes that statutory regulation is based on certain definite principles—not the least of which is the fact that the political subdivision, federal, state, or local, in order to establish any statutory regulation, must first remove all personal privileges and rights, before it can permit their limited restoration. That, in simple language, is licensure—this is what we talk about when we refer to "licensure"—and its sole objective is protection of the public.

There is no denying that over the years a certain group of prolicensure dental laboratory operators have preached the theory that a license, registration or legal control would be the panacea and the cure-all for the laboratory's problem. Some of these people have been very vocal and their influence has been felt. Basically, their theme has been that creation of a "limitation" (what they mean is "monopoly") would limit unfair competition—and improve the laboratory's skill. These people seem to see in regulation or registration a limitation on the number of laboratories operating, and this view is shared, in fear, by some members of the profession. It is apparently the idea of both groups that limiting the number of laboratories would limit competition—legal and illegal. Each group has its own reasoning and the views are divergent.

Recently one of the leaders of one of our components wrote:

> It is the view of many dentists and lab men alike that limiting the number of laboratories or men would also limit competition. Such an assumption, it is submitted, is not necessarily true and in this instance is erroneous. It is said that "competition is the spice of life," but such concept is predicated on the assumption of all competitive inducements such as the creative development of better services, finer product, greater efficiency in economics, and greater sales effort to the end that more people could enjoy these fruits.
>
> In a potentially unlimited direct market, such a concept may be true, even with a potentially unlimited number of competitors. Within the confines of a definitely limited market, however, the number of competitors may reach a point of diminishing return by means of creating more overhead costs and diversion of the fruits of a limited business volume among an excessive number of people. Such is the actual situation in the dental laboratory field, wherein an excessive number of competitors, together with a serious lack of quality discrimination on the part of many dentists, has so focused attention upon price alone that the other and better elements of competition have been largely ignored. In fact, competitive premium and incentive have been forced into channels of shortcuts, inferior materials, and other undesirable methods in order to meet price competition. Thus the competitive situation in the laboratory field is retrogressive.

Whether or not these conclusions are correct is not for us to argue or attempt to solve. It is merely offered to call attention to the fact that laboratory operators as businessmen are studying the economic picture, and their concern is not so much registration, licensure, or accreditation, but one of survival and development of a sound economic picture for the future.

The dental laboratory operator knows that in the 20 years between 1932 and 1952, wholesale prices rose 167 per cent. During the past 20 to 30 years an in-

crease in prices has occurred so huge as to warrant being called a price revolution. In the 12 year period beginning January 1941 and ending January 1, 1953, the official consumer price index increased from 100 to about 190. That is a 90 per cent increase in the cost of living.

That is a dangerous figure, and if it be so—and this is important to the laboratory operator's business—in these years, not only has he seen a price revolution, he has seen a social revolution as well.

In 1955 it was estimated that less than 35 per cent of the approximately 7,000 laboratories in the United States were economically sound. If this be true, it means that about 65 per cent, or over 4,500, laboratories in the United States are financially unsound—and that could mean an increasing interest in the "easy money of unethical practice."

An important emphasis was placed on the economic factor in 1957 when the American Dental Trade Association voluntarily contributed $2,000 to the National Association of Dental Laboratories to help finance the standard accounting system that we are having developed by Dr. Robert Cox, director of the accounting section of the Wharton School of Business and Finance at the University of Pennsylvania.

According to the Bureau of Labor Statistics in Washington, the increase in cost for services during the period 1936 to 1956 was:

Hospital rooms	265%
Men's haircuts	221%
Shoe repairs	135%
Movie admissions	114%
Public transportation	113%
Laundry services	108%
Automobile repairs	84%
Dental fees	82%

It can be seen that the increase in dental fees is comparatively low and that worries us—for what about the dental laboratory?

During that same period, laboratory fees increased only about 30 per cent—yet the cost of direct labor increased all out of proportion to the price increases. In 1940, in my section of the country, a set-up man's salary was $50.00; in 1958, $120.00—an increase of 140 per cent. In 1940, the denture-waxer and finisher drew $35.00; in 1958, $75.00—or a 114 per cent increase. In 1940 the plasterer, polisher, or apprentice was paid about $25.00. In 1958 he has been getting $55.00, an increase of 110 per cent. In addition, the laboratory owner must supply certain fringe benefits such as life, accident and hospitalization insurance, paid vacations and paid holidays, if he is to compete for labor.

Yet, even with this percentage of increase in dental laboratory technicians' salaries during the past 20 years, it is inadequate in today's economy. In June 1958 I was told that the hourly rate for plumbers in Fort Smith, Ark., was $4.00. A reliable source stated that the average hourly pay of a Ford Motor Company employee in this country is $3.17. The average hourly pay of the dental laboratory technician in the United States does not approach either of these figures. Is it any wonder that the field of dental laboratory technology has become very unattractive because of its lack of promise for the future? Is it any wonder, when a union comes along and promises the dental laboratory technician the "easy road of licensure," as it did in California and Oklahoma, that they are interested? Is it any wonder that many fine dental laboratory technicians have left the field entirely and others have become engaged in illegal practices?

There is little question that this economic situation is one of the reasons for the rise in unethical, illegal practices. That is the reason for the growth of the public dental laboratories. I am told that in Idaho the advertising laboratory has hired many of the good dental laboratory technicians away from the ethical opera-

tors, and there seems to be no power for regulating this chain of laboratories.

What does the average ethical dental laboratory operator of today want? What are his hopes for the future, for himself, for his craft, for the industry of which he is a part? Does he want licensure, registration, accreditation, certification, or a combination of these things?

I believe that he wants them only if they would place him in a position of greater security that would, in turn, enable him better to fulfill his obligations to the dental profession, on the one hand, and better to fulfill his obligations to himself, his family, his employees and their families, and to his community, on the other.

GOALS OF DENTAL LABORATORY OPERATOR

During the past seven years I have discussed these questions with many dental laboratory operators from all sections of the country. Because I feel that it is pertinent to the purpose of this symposium, I would like to give a personal viewpoint, a laboratory operator's viewpoint, on what I think the average ethical laboratory operator wants and what he hopes the future will bring.

It should be kept in mind that about 85 per cent of the dental laboratories in the United States are small laboratories with one to five technicians and that most dental laboratory operators are, themselves, technicians.

Today the average dental laboratory operator seems to want three things: (1) recognition, (2) economic equality and economic stability and (3) active support of the dental profession in the achievement of these things.

Recognition • The ethical operator desires recognition as a respected member of the dental team; recognition as a bona fide and respected ethical business entity in the field of commercial business ventures, and recognition as a skilled technician in a recognized field of skilled dental craftsmen. These things, he feels, would bring his ethical craft and industry out of hiding, clearly and completely separate them from the unethical operators, and would grant him social recognition in the field of ethical small business ventures and in the field of skilled technicians. He has no desire to cross the boundary line of ethics or legality in his operation, but he does have a burning desire to achieve the recognition he feels should be accorded ethical dental laboratories and the skilled dental laboratory technician.

Economic Equality and Economic Stability • The ethical operator feels that he should be entitled to an income and standard of living equal to that of operators of similar small businesses or equal to that of skilled technicians employed in other fields or to both. He does not believe he should be compelled to work 16 to 20 hours per day, plus holidays and, quite often, week ends, in order to have that economic equality with those in other, similar, fields. He resents, strongly, the very existence of the unethical dental laboratories who practice dentistry, illegally. Too, he resents the fact that the stability of his market is endangered because some dentists in his area send work to other laboratories on the basis of price alone, not on the basis of better work, and with no consideration given to the question of whether these "price" laboratories are ethical or unethical.

Cooperation of the Dental Profession • The average ethical dental laboratory operator feels that his loyalty and service to, and cooperation with, the profession entitles him to expect the support and cooperation of the profession in solving these problems which deny him this recognition, economic equality and economic stability. He believes that the attainment of these goals will not only benefit him

and other ethical operators but also be of great benefit to organized dentistry. He believes that any program that will fulfill his desires on these points will do much to discourage the public denturist movement and the bushwacker, will strengthen his own position as an operator of an ethical laboratory that is sound financially and can guarantee a better service to the profession, and will assure an influx of the desired type of recruits into the field of dental laboratory technology. He is ready to cooperate with the profession on any program of identification that will bring about these changes, changes which he feels are necessary for the future welfare of the ethical dental laboratories and organized dentistry.

DENTAL LABORATORY VIEWPOINT

Again, it is not our intent to promote licensure, registration or statutory regulation. We at the National Association of Dental Laboratories have great faith in the future of the joint American Dental Association-National Association of Dental Laboratories program of certification, not only as that program applies to the dental laboratory technician in the present planning, but as the program may be projected to the dental laboratory itself to raise standards in the service given in fulfilling the dental prescription or authorization. The program of technician education, we believe, will encourage a higher caliber of individual to enter the field of dental laboratory technology. Our program of Unistan Accounting, we hope, will make the laboratory operator aware of cost factors, so that he will operate as a businessman and not sell his services on a giveaway basis.

It may be that a program of statutory regulation, based on these standards, may be necessary to supplement the service, codify the activities, and protect the dental prescription from unscrupulous and unskilled operators. I do not know.

I do know that our National Association of Dental Laboratories has taken a definite stand in support of the American Dental Association in opposing the public denturist and the public dental laboratory; and I do know that we are opposed to the bushwacker, as well. If these are permitted to grow, the dental laboratory industry is headed for bankruptcy, or worse, a trend toward the attitude that "if you can't lick 'em, join 'em"—the old jungle law of the "survival of the fittest." Ethical dental laboratory operators are too proud of their skills and services to want to join this kind of operation, but it's a real threat to us all. The public must be protected from it, and if the dental profession ultimately comes to the conclusion that statutory regulation is the only means of controlling this, then, and only then, is it likely that our organization will support such regulation.

We are aware of regulatory statutes introduced in some states during the past year and being proposed for others in the next year or two, but we cannot say we favor these as they have been proposed or written—we have been advised by legal counsel that these present documents are likely to worsen the situation rather than better it, because these regulatory laws appear to be documents of expediency and not developed with a thought of covering all facets and protecting all entities. Some of the requirements, we are told, might even damage the laboratory and could be contested in expensive court proceedings.

Perhaps it will be the conclusion of the dental profession in the near future that statutory regulation of the technician and the laboratory is necessary for the protection of the dental public health. Perhaps the dental profession will come to the conclusion that such controls that can be spelled only in the "license to serve" will be important, since in a "license" the individual will have something tangible to lose. It may be that the dental profession will conclude that licensure is

indicated because "the danger of losing the right to work" may prove the instrument for controlling illegal practice.

If agencies of the American Dental Association do reach such a conclusion, we of the National Association of Dental Laboratories will support their activities and cooperate in the development. We must because we, too, have the problem of survival. The future of the dental laboratory industry lies with the future of the dental profession, and the National Association of Dental Laboratories must act to protect the investment each of its members has made in his lifetime in his livelihood—but it is hoped that the dental laboratory industry is not bypassed in the planning.

In the meantime, I hope each of the state dental societies will support, endorse and promote the certification program, because it is vital that these associations make an all-out effort to acquaint the individual dentist with the importance of certification to his own practice. It should be remembered that certification is a program sponsored by the American Dental Association and the National Association of Dental Laboratories. In it, for the first time, is a means of establishing standards of education, skill and ability for the dental laboratory technician. Here, for the first time, is the means of establishing criteria for the fulfillment of the dental authorization or prescription.

First National Bank Building

Education by Television • Systematic courses of study in many subjects can be taught by the same teachers as effectively by television as by personal instruction. This has been positively demonstrated by experiments and research. The advantages for the education of young people by television are obvious: the excellent teacher can be more widely effective; in some instances the stimulus of television will even improve the quality of teachers. Parents and other adults not only can be made more interested in the schooling of young people but also can themselves be moved to study and reading. The potentialities of educational television as an aid to systematic study by adults are equally as great. In the development of programs for the liberal education of adults it is hoped that telecourses will be created that will make major contributions in their own right and that also will set standards for imaginative and excellent teaching. *Carroll V. Newsom. Educational Television Programs.*

Dental practice and dental fees: a symposium

In November 1957, the House of Delegates of the American Dental Association directed the Council on Dental Health and the Bureau of Economic Research and Statistics to "study the many factors which should be considered in determining the value of dental care and attempt to apply this information to the development of fees for dental care."

Accordingly, a major portion of the Ninth National Dental Health Conference sponsored by the Council at Association headquarters in April 1958 was devoted to the subject of dental fees. Five papers were presented to outline the Council's approach to a sound program of dental practice administration, with particular attention to factors in determining fees. The papers, together with the conference recommendations, were considered by the Council in developing a statement of guiding principles for the establishment of sound and equitable fees. The statement, "Dental Fees," was approved by the House of Delegates at the 1958 annual session in Dallas November 10-13. It will provide the framework within which the Council can develop and make available to the profession information on sound, effective methods for determining fees.

The statement of principles, "Dental Fees," as adopted by the House of Delegates of the American Dental Association at the 1958 annual session, is as follows:

Within the limitations of the *Principles of Ethics* of the American Dental Association and the code of ethics of his state dental society, the dentist may determine for himself the character of practice he chooses to conduct. Section 2 of the *Principles of Ethics* states:

"Service to the Public: The dentist has a right to win for himself those things which give him and his family the ability to take their proper place in the community which he serves, but there is no alternative for the professional man in that he must place first his service to the public.

"The dentist's primary duty of serving the public is discharged by giving the highest type of service of which he is capable and by avoiding any conduct which leads to a lowering of esteem of the profession of which he is a member."

The dentist's fees should reflect his professional capabilities and the character of his practice. His fees can do so if their determination is based upon:

1. The principles of cost accounting which establish the chair-hour fee requirements of the practice.
2. Those intangible professional factors which will affect the chair-hour fee requirements, such as:
   a. Relation of the service to the total health of the individual;
   b. Relative time and skill required for the particular service;
   c. Relative experience, skill and continuing education effort of the dentist;
   d. Limitations of the patient's ability to pay.

Information should be developed and made available to the profession on sound effective methods for determining fees through application of the foregoing factors.

In addition to the determination of the fee, there should be a truly professional presentation of the treatment plan to the patient. This presentation should be based upon a complete diagnosis of the patient's oral health and its relation to his total health. The presentation should include a professional explanation of the fee as a factor in the dental health education experience of the patient.

Four of the papers given at the Ninth National Dental Health Conference are presented herewith.

BASIC ELEMENTS OF A PROGRAM FOR EFFECTIVE DENTAL PRACTICE ADMINISTRATION

Robert L. Jorgensen, B.S., C.P.A., Chicago

Studies made by the American Dental Association have shown that the rate of growth of the population of the United States has exceeded that of the dental profession.[1] Consequently, the profession is faced with the problem of providing additional dental care to maintain dental health at present levels. Improvements in the standard of dental care will provide further demands on the profession.

R. H. Friedrich, secretary of the Council on Dental Health of the American Dental Association, has stated that the ability of the profession to provide increased dental care will depend on the solution of several basic problems, which include:[2]

1. An improvement in the level of general dental health through prevention of dental disease.

2. An increase in dental manpower to maintain, as a minimum requirement, the present dentist-population ratio.

3. An increase in the productivity of dentists to make more dental care available to more people.

The American Dental Association has taken steps to meet the challenge. For example, one of the responsibilities of the Council on Dental Research is the conduct of basic research directed to the prevention of dental disease. The Bureau of Dental Health Education programs promote the education of the general public in the benefits of sound dental health and preventive measures. The Council on Dental Education is active in programs related to providing additional dental manpower. The Council on Dental Health is undertaking a series of studies in the field of dental practice administration as a means of increasing dentists' productivity without sacrificing present standards of quality of care and patient comfort. The purpose of this paper is to outline the basic elements of dental practice administration and the approach of the Council on Dental Health to the development of studies in that field.

The approach to the problem will have many similarities to that which would be employed in studies for the purpose of increasing the productivity of a business concern. Although differences do exist between a professional dental practice and a business concern, a dental

Partner, Swanson, Ogilvie and McKenzie, management consultants.

1. American Dental Association, Bureau of Economic Research and Statistics: The 1956 survey of dental practice. Chicago, American Dental Association, 1957.

2. Friedrich, R. H.: Dental practice during the next ten years. J.A.D.A. 56:795 June 1958.

practice, in effect, is a type of business. It produces a product, making use of labor, materials and equipment, for a price, as does business. It is faced with the need to sell its product at a profit and provide the capital required for its operation. Unlike business, however, the primary objective of the dental profession is service to the community in the realm of dental health rather than a profit-making incentive. In view of the business aspects common to the dental profession, it is logical to employ a businesslike approach to a study pointed to an increase in the productivity of dentists.

At first glance, it might appear that the solution to the problem of increasing the productivity of the dental profession by means of more effective practice administration is relatively simple. For example, it should not be difficult to increase the number of patients a dentist can treat if effective use were made of auxiliary personnel to enable him to devote more time to work requiring his professional skills. Another promising approach might be the determination of the most efficient layout of the dental office and arrangement of its equipment.

However, a brief consideration of the problem indicates its magnitude is comparable to the problem of increasing the productivity of an industrial labor force. There are many avenues through which increased productivity may be attained, some considerably more rewarding than others. A businesslike approach to the problem would include, as the initial step, a preliminary study to segregate the problem into its component elements and the determination of those offering the greatest rewards consistent with related costs. Studies of each element of the problem then would be made in accordance with the predetermined outline. A study of a single element might be of long or short duration, but the series of studies required for the entire problem would be accomplished over an extended period of time.

Using the approach outlined, the field of dental practice administration has been segregated into eight major divisions, as follows:

1. Organization of a dental practice
2. Location of a dental practice
3. Dental office and equipment
4. Personnel requirements
5. Dental fees
6. Office systems and procedures
7. Finances
8. Patient and public relations.

It is recognized that there may be other factors of sufficient importance to warrant classification as a major division of the dental practice administration field. However, the classification listed should provide adequate areas for a number of extensive and rewarding studies.

It is suggested that the Council on Dental Health appoint a Committee on Dental Practice Administration to assume direction of its program. The Committee, as a group, should have a well-rounded background, including an intimate knowledge of the dental profession, business management and survey technics. It should be the function of the Committee to analyze further the scope of the program and to determine the sequence in which the studies are to be undertaken and the most effective method of conducting each study. In some cases, the actual conduct of a study may be assumed by the Committee. However, the services of other agencies, qualified to conduct studies in specific fields, should be utilized to the fullest extent. In all studies, an extensive analysis of work previously done should be a part of the program to avoid duplication of effort. The conclusions and recommendations developed from each study would be presented by the Committee to the Council on Dental Health for acceptance.

The following comments will be concerned with a brief examination of the type of studies which might be made under each of the eight major divisions

of the dental practice administration field.

ORGANIZATION OF DENTAL PRACTICE

The 1956 Survey of Dental Practice, prepared by the Bureau of Economic Research and Statistics of the American Dental Association,[1] presents a classification of dental practice organization by type of employment as follows:

	Per cent of respondents
Independent practice without partners and with no sharing of costs	74.4
Independent practice without partners but sharing costs of offices or assistants, etc.	8.8
Independent practice as a partner in a complete partnership	1.9
Employed by another dentist	1.8
On staff of dental school	.8
Other position as salaried dentist	1.2
Combinations of above types of employment	11.1
Total	100.0

It is evident that a substantial majority of dentists maintain an independent practice without partners and with no sharing of costs. However, the fact that a particular type of organization is the most prevalent is not conclusive proof that it provides maximum productivity consistent with present standards of quality of care and patient comfort. It is conceivable that other types of organization would be preferable under certain circumstances. For example, in the formative stages of the management consulting and public accounting fields, individual practitioners were predominant. However, the partnership form of organization rapidly developed because the advantages of interchange of professional knowledge, possibilities of specialization, expansion of services available to clients and other factors were recognized. A study of dental practice organizations, directed to the establishment of a series of guideposts for the determination of the most desirable organization under varying circumstances, should be of value to the profession.

A study could be designed to include the problems faced by the recently-graduated dentist in regard to the selection of the most advantageous type of dental practice organization. The objectives of this phase of the study would be the reduction of the productive man-hours lost while building a practice and the more rapid development of professional skills which can be acquired only through actual practice.

LOCATION OF DENTAL PRACTICE

The problem of location of a dental practice includes not only the selection of a city or area but also the selection of a specific site within that area. To assist the dental profession in distributing its manpower most effectively, extensive information is required as to the relative adequacy of dental care resources available within areas. This type of information includes geographic distribution of dentists, both general practitioners and the various specialists; anticipated future dental care requirements, and other area characteristics, such as general economic level of the population, types of industry and so on.

Studies in regard to the selection of specific sites within areas also should be rewarding. For example, it seems logical to assume that for a given set of circumstances, a particular type of location would be as advantageous for the dentist as it is for industry. A study of successful dental practices should result in the formation of a realistic set of site requirements.

DENTAL OFFICE AND EQUIPMENT

The major share of advances in dental office layout and equipment design and

arrangement has been developed through the experiences of dentists themselves, with the assistance of dental equipment manufacturers. However, the opinion of a number of dentists is that much probably can be done to increase productivity by means of better office layout, equipment design and arrangement and, possibly, motion study. The Council on Dental Health could make valuable contributions to the profession in this area by means of objective studies of the various aspects of the problem and in coordinating such studies with the programs carried on by equipment manufacturers, office layout, equipment arrangement, lighting, air conditioning, furnishings and other aspects. It should be noted that the Council already has contacted the American Institute of Architects which has expressed an interest in developing a joint project to determine the most efficient functional designs for dental offices.

PERSONNEL REQUIREMENTS

Studies conducted by the Bureau of Economic Research and Statistics of the American Dental Association,[1] as well as other agencies, indicate that substantial increases in the productivity of dentists can be attained through the use of auxiliary personnel. The studies also show that the use of auxiliary personnel does not create a financial burden but actually provides additional income. The opportunities available to the dentist in this area for delegating functions not requiring his professional skills appear to exceed the possibilities offered by any other area of practice administration.

The field of auxiliary personnel presents a number of possibilities for worthwhile studies which can be classified in general as (1) studies related to the effective utilization of auxiliary personnel and (2) studies related to problems of personnel administration.

A study of effective utilization of auxiliary personnel would include not only an analysis of their duties, training and value to the dental profession but also the most profitable sequence for the addition of auxiliary personnel. For example, it would appear more profitable to engage an assistant to relieve the dentist of office record keeping and other clerical routines before employing a chair assistant or a laboratory technician.

The field of personnel administration also is worthy of study, not so much from the standpoint of developing new concepts of personnel administration but, rather, in the effective presentation of established concepts to the dental profession. Much valuable work has been done in the realm of personnel administration by private industry, colleges and universities and other agencies. However, it is doubtful that the dental profession, in general, has a comprehensive working knowledge of the subject.

DENTAL FEES

Although the determination of an equitable fee for dental services is a most significant phase of dental practice administration, the dental profession, in general, has not devoted adequate attention to the problem. Other papers presented in the Ninth Dental Health Conference will develop the subject of factors in fee determination more fully than is possible within the confines of this paper.

OFFICE SYSTEMS AND PROCEDURES

In the business field, considerable attention has been focused on improvements in office systems and procedures, particularly since World War II. Business has realized that efficiency in the office is a requirement for successful operations. The growing load of clerical work, resulting from the need for comprehensive data on which to base business decisions and to prepare endless governmental re-

ports, has forced business to streamline its clerical operations in today's competitive economy.

Effective office systems and procedures also are essential to the operation of a successful dental practice. This impact will be felt to an even greater degree as the utilization of auxiliary personnel is expanded by the profession.

The subject of dental office systems and procedures is a broad topic in which the following are significant elements:

1. Patients' appointment and recall procedures
2. Patients' history records
3. Accounting procedures
4. Billing and collecting procedures
5. Purchasing procedures
6. Office equipment requirements
7. Personnel records

Studies made in these areas undoubtedly would include a survey of current systems and procedures practices, a critical analysis of their strong and weak points, and the determination of specific recommendations for improved systems and procedures. Related agencies of the American Dental Association, such as the Bureau of Economic Research and Statistics, and consultants in office systems and procedures could be called upon for assistance in such studies.

FINANCES

It is generally recognized that a strong financial position is one of the distinguishing characteristics of a successful business enterprise which is essential if the confidence of customers, suppliers and creditors is to be retained. A considerable amount of study has been devoted to the determination of measures of sound financial position and satisfactory operating results. Not only are such measures utilized by customers, suppliers and creditors to determine the financial ability of a business, but by the business itself. Much can be learned by comparing the various financial and operating measures of a given company with those of successful concerns in its field.

A sound financial position also is a distinguishing characteristic of a successful dental practice. However, it appears that financial yard sticks by means of which a dentist may compare his practice with successful practices are not available. A study designed to determine the income and expense relationship of each of the various practice classifications would be of value in assisting a dentist to analyze his operating results and to take constructive measures to improve them. Also, a study designed to determine the capital investment required would be of value. Such a study would provide information in regard to the amount which should be invested in the office and in dental equipment, at what stages the purchase of additional equipment is justified, the amount of accounts receivable a practice can afford to carry, and other similar data. An analysis of the most advantageous methods of financing equipment purchase also would be of value, particularly to recent dental graduates.

PATIENT AND PUBLIC RELATIONS

Patient and public relations are combined as a single classification because, in effect, they are one and the same. The relations between the dental profession and the public are the composite of the relations of each dentist with his patients. If patients have confidence in the ability and integrity of their dentists, the public has confidence in the profession. Consequently, studies directed toward patient relations will incorporate public relations.

Studies in this area are of a more intangible nature than the other areas previously discussed but are considered to be of equal importance. This classification would include dental ethics, professional and legal responsibilities, education of the profession on a continuing

basis, patient education, community responsibilities and other related topics. The close relationship of this subject with all phases of practice administration makes its inclusion in a study of practice administration essential.

SUMMARY

As outlined previously, the American Dental Association has taken steps to assist the dental profession in meeting the anticipated expansion of dental care requirements. Certain of its agencies are concerned with the improvement in the level of general dental health through prevention of dental disease and in securing an increase in dental manpower to maintain, as a minimum requirement, the present dentist-population ratio. The Council on Dental Health has assumed the responsibility for the conduct of a series of studies in the field of dental practice administration as a means of increasing the productivity of dentists without sacrificing present standards of quality of care and patient comfort.

It is anticipated that the Council on Dental Health will develop the sequence in which the studies are to be made, the programs to be employed and, in some instances, actually conduct the studies. In other instances, qualified agencies within and without the American Dental Association may conduct the studies in whole or in part.

Serious consideration must be devoted to the most effective methods for the distribution of the results of the studies to the dental profession. The failure to communicate the findings to the profession would destroy the value of the entire program. It has been suggested that clinics conducted on the local level might prove to be an effective means of reaching practicing dentists. Also, the cooperation of dental schools might be secured to include such material in the dental curriculum. The successful solution to the communications problem is essential if the dental profession is to benefit from the studies. *176 West Adams Street*

APPLICATION OF COST ACCOUNTING PRINCIPLES IN DETERMINATION OF FEES FOR SERVICES

T. Leroy Martin, Ph.D., C.P.A., Evanston, Ill.

The term "cost" is used in so many different relationships that it is useful in the beginning to clarify the meaning of the term. The expressions: "cost of living," the "cost of war" or "it cost me my shirt" are commonplace. Webster's standard dictionary defines cost as that value which is expended to produce a product or to achieve a desired end.

I shall use the term cost as representing the value of services and materials used up in achieving a specific end, such as manufacturing a machine, selling a product or pulling a tooth.

Expenses and costs differ considerably in regard to the manner in which they are incurred, the necessity for their incurrence, and their relation to the activity which creates the expense. For example, costs and expenses may be classified as fixed or variable. The term "fixed" applies to those costs which will remain relatively the same amount whether the activity of manufacturing, selling or personal service is great or

Professor of accounting, Northwestern University.

small within the limits of the capacity of the organization to produce. These fixed costs are illustrated by rent, heat, light, office salaries and other costs which remain the same so long as the space used and services required are not changed. Variable costs are illustrated by the cost of supplies used, power consumed and other expenses which are incurred only when productive activity is in process.

To illustrate the effect of fixed and variable costs at different levels of productive capacity, let it be assumed that a master carpenter decides to open a woodworking shop and confine his activities in the beginning to storm windows in a single size, which he has agreed to sell to a mail-order house, unglazed for $4.50 each for a total order of 1,600 windows. The price is an average one paid by the mail-order house. To do the work with the greatest proficiency will require an expenditure of the following amounts for the purposes shown:

Power tools	$ 8,200
Hand tools	1,200
Truck	3,400
Total	$12,800

The following monthly costs are anticipated if the shop is set up to produce 200 windows a month without hiring extra labor:

Rent	$ 150
Power and light	50
Operation of truck	80
Telephone	15
Supplies and miscellaneous	150
Total	$ 445

The fixed costs consist of the $445 plus total estimated depreciation on the tools and trucks of $150 a month or a total of $595.

The monthly variable costs to produce the 200 windows are estimated to be as follows:

Lumber	$ 185
Nails, dowels, glue, etc.	15
Total	$ 200

The foregoing indicates that selling 200 windows a month will bring in earnings of $900 against expenses of $795, leaving an amount for the carpenter's service of $105, which is less than one fourth what he has been earning without the necessity of investing $12,800 in equipment.

Having had experience in estimating construction costs, the master carpenter is aware of the effect of volume on costs. He realizes that the power tools which he requires will stand idle many hours with only one woodworker moving from one type of machine to the other. He, therefore, makes a recomputation of costs based on the employment of a second carpenter who could be employed at $3.60 an hour with a guarantee of eight months' work the first year. This will increase the monthly cost about $500 and will increase the monthly production 175 units.

A summary of costs under this assumption follows:

Lumber	$ 346
Nails, dowels, glue, etc.	27
Depreciation	150
Other fixed costs	445
Salary	500
Total	$ 1,468

The net earnings if 375 windows can be sold will be the difference between the sale price of 375 windows, $1,687.50 and the cost of $1,468 or a net of $219.50.

The smallness of the net earnings makes it advisable to consider a further increase in potential volume. A further study of the situation reveals that he could employ an apprentice woodworker who would also drive the truck for hauling lumber and supplies and delivering windows for a beginning salary of $300 a month and that the production by the

apprentice plus the time taken from trucking for the other carpenters would permit an additional increase in production of 160 windows a month.

A summary of costs under this assumption follows:

Lumber	$ 395
Nails, dowels, glue, etc.	38
Depreciation	150
Other fixed costs	445
Salaries	800
Total	$ 1,828

The net earnings are:

Sales of 540 windows @ $4.50	$2,430
Less total cost	1,828
Net earnings for owner	$ 602

If the mail-order house could increase the order to take the total output, the problem would be solved. The alternative would be to find a market for the excess elsewhere, perhaps at a higher price.

To relate these cost concepts to the profession of dentistry, let it be assumed that a study is to be made of the costs of operating a dental establishment, conducted by two dentists in leased space consisting of five rooms, and employing two female assistants, one of whom is assigned full time to services in connection with dental practice. Assume that the other is assigned to work as a receptionist, making appointments, keeping all records, and sending out statements, but who is also trained as a dental assistant and serves in that capacity when the necessity arises.

The costs of the assumed establishment in the short run might be as illustrated below. The short run means within the limits of time during which the owners are willing to operate either without moving to smaller quarters and discharging one or more assistants or moving to larger quarters and employing a third assistant in some capacity.

Fixed Costs Per Year

Rent	$ 3,600.00
Light	150.00
Insurance	300.00
First assistant	4,800.00
Second assistant	3,800.00
Payroll taxes	200.00
Telephone	120.00
Janitor service and laundry	210.00
Dues to dental associations	200.00
Periodicals	75.00
Depreciation of equipment	2,000.00
Total	$15,455.00

Variable Costs Per Year At Normal Capacity

Dental supplies	$1,050.00
Laboratory services and x-ray	980.00
Printing, postage and stationery	350.00
Audit and legal fees	400.00
Repairs and maintenance	280.00
Total	$3,060.00

Note: The foregoing disregards a possible third group of semivariable costs made up of such expenses as repairs and maintenance.

If the dental offices under consideration here were open 1,800 hours a year, the fixed cost per hour would be $8.58 ($15,455.00 ÷ 1,800) whether a single patient was served. If it is assumed that the operation is at normal capacity, the variable expenses will increase the cost to $10.28 per hour. It should be pointed out here that the computed hourly cost listed includes no amounts for the professional services of the dentists. Under the assumed conditions, billings to patients would have to average more than the cost of $10.28 per business hour before the dentist had earned anything. Total billings to patients would have to total $38,515 or an average of $21.39 per each of the assumed 1,800 business hours of the year to produce $20,000 to be divided between the two dentists. To achieve the $20,000 net amount, the total of $38,515 would have to be billed even if some of the 1,800 hours were nonproductive. If it is assumed 300 hours were nonproductive, the billing per pro-

ductive business hour increases to $25.67.

The productive hour referred to here is an operation hour, not patient hour. To prevent confusion, a further analysis must be made. Let it be assumed that of the 1,800 productive operating hours, 1,500 represent hours in which both chairs are in operation and 200 hours in which only one chair is in operation. From this information, it can be seen that patient hours total 3,200 ($1,500 \times 2 = 3,000+200$). The total fee realization to produce a net of $20,000 for the two dentists is $12.04 per hour ($38,515 \div 3,200$). To produce a net of $40,000 to be divided by the two would require a patient fee realization of $18.28 per patient hour of service.

To illustrate the effect of fixed costs on operation, let it be assumed that during the first year of operation patient hours totaled only 1,800 which is just 50 per cent of the assumed capacity of 1,800 business hours times two chairs or 3,600 patient hours. It should also be assumed that the variable costs are about 50 per cent of the normal capacity costs stated, or $1,530. The total cost is, therefore, $16,985 or $9.43 for each of the patient hours without allowing anything for professional services of the dentists. If the dentists expected to have $20,000 to divide for their services, the total realized per patient hour billing would have to be $20.55 as compared with the $12.04 per patient hour to be realized to produce the same earnings under the assumption of 3,200 patient hours.

If in this assumed situation, patients were being charged on a scale which produced $20.50 per patient hour, and if it were estimated that a reduction in average charges to patients to $18.00 an hour would increase the number of patient hours to a total of 3,200 which is to be considered normal capacity, then the operation will produce a total income of $57,600 or a net for the two dentists of $39,085 as compared to the net of $20,000 previously computed. There is no suggestion here that such a reduction in fees would produce that many more patients.

The foregoing per patient hour analysis of operating costs is the simplest type of cost analysis. It is comparable to the patient day analysis used by hospitals. The analysis makes no distinction between the costs of a patient hour for prophylactic service or preparation for an inlay or a bridge. Setting patient charges on the basis of over-all hourly cost produces inequitable overcharges for some services and under-charges for others. This statement is based on the simple fact that some kinds of service produce more variable costs for supplies, electric energy, maintenance cost and dental assistants' time than others do. This concept also disregards the degree of professional skill required in the various services and the generally accepted belief that some services are worth more to the patient and, therefore, are more costly to the patient. It merely rests on the assumption that charges to patients should be related directly to costs. It is believed the patient has a right to expect he will not be called on to pay the cost of maintaining an establishment geared to handling many more patients than actually patronize it.

However, this paper is concerned with the kind of service a dentist may wish to solicit at what may be termed the going rate for such services in the community. His choice should be based on a comparison of cost and charges for the various services.

A more scientific analysis of costs requires a consideration of direct costs, indirect costs and joint cost concepts. In a service organization these concepts may be illustrated best when the operations are departmentalized.

Let it be assumed that four dentists have associated themselves for professional practice and have employed a roentgenologist, a dental hygienist and

Table 1 • Estimated costs for establishment having four dentists, roentgenologist, hygienist and three other assistants

Fixed costs		
Direct:		
Hygienist's salary	$5,200.00	
Roentgenologist's salary	7,800.00	
Dental assistant's salaries (2)	9,600.00	
Dental assistant's salary (½)	1,900.00	
Depreciation	3,500.00	
Payroll taxes	327.00	
Hygiene supplies	965.00	
Radiology supplies	1,280.00	
Dentistry supplies	1,440.00	$32,012.00
Indirect:		
Dental assistant salary (½)	$1,900.00	
Rent	4,900.00	
Light	270.00	
Insurance	600.00	
Payroll taxes	43.00	
Janitor service and laundry	400.00	
Dues to dental associations	275.00	
Periodicals	75.00	8,463.00
		$40,475.00
Variable costs		
Direct:		
Laboratory service	$ 475.00	
Repairs and maintenance	625.00	1,100.00
Indirect:		
Printing, postage and stationery	$ 750.00	
Audit and legal services	750.00	
Miscellaneous	125.00	$ 1,625.00
		$43,200.00

three other assistants, one of whom is to act as receptionist and bookkeeper as well as assist in professional work. The costs of operating this establishment at normal capacity may be summarized as indicated in Table 1.

For cost purposes this establishment will be divided into three departments; namely, dentistry, hygiene and radiology.

Direct costs are those which are readily identified with the department which gives rise to them. For example, a dental assistant's salary is readily identified with the dentistry department as is the depreciation computed on the equipment in the dentistry department.

Indirect costs are those for which the relationship to a department is more obscure even though it is recognized that each department helps create indirect costs. This is the point at which the concept of joint cost becomes pertinent. All indirect costs are incurred jointly by the various departments without there being an apparent relationship to a specific operation in a department in the generation of these costs. The allocation of these indirect joint costs presents a problem in selecting an equitable basis upon which to charge them to a department.

Without arguing whether the basis selected is the most equitable one, in the illustrated cost allocation shown in Table 2, indirect costs are allocated in direct proportion to all direct costs in the department.

In the ABCD Dental Clinic illustration, the cost per hour of dentistry is a low $3.12 because fixed costs are spread over three departments and within the

Table 2 • Cost allocation. (Indirect costs allocated in direct proportion to all direct costs in department)

The ABCD Dental Clinic
Statement of Departmental Cost Allocation

Direct expenses	Departments			
	Total	Dentistry	Hygiene	Radiology
Hygienist's salary	$ 5,200		$5,200	
Roentgenologist's salary	7,800			$ 7,800
Dental assistant salary (2)	9,600	$ 9,600		
Dental assistant salary (½)	1,900	1,900		
Payroll taxes	327	138	95	94
Depreciation (a)	3,500	1,700	500	1,300
Hygiene supplies	965		965	
Radiology supplies	1,280			1,280
Dentistry supplies	1,440	1,440		
Laboratory service (b)	475	375		100
Repairs and maintenance (c)	625	425	75	125
Total direct costs	$33,112	$15,578	$6,836	$10,699
% of total		47.05	20.64	32.31
Indirect expenses				
Allocated on above percentage	10,088	4,746	2,082	3,260
Total departmental cost	$43,200	$20,324	$8,917	$13,959
Patient hours		6,500	1,500	
Number of films				2,500
Cost per patient hour		$ 3.12	$ 5.94	1
Cost per film				$ 5.58

(a) Basis of value of equipment in each department.
(b) and (c) assumed.

dentistry department over four chairs. Of course the $3.12 per patient hour does not include anything for professional service of the dentists. Basing charges to patients with the expectation of realizing $15.50 per dentistry patient hour will produce total billings for dentistry of $100,750 and a net earnings for dentistry of $80,426 ($100,750 — $20,324) to be divided among four dentists. Any amount by which patients' charges are in excess of the costs in the hygiene or radiology departments represents additional net earnings for the dentists.

Although the low costs per hour computed in the foregoing illustration may be distorted because of the arbitrary selection of the costs used to compute them, the trend toward lower hourly costs and toward resulting higher net income as the number of persons employed in the establishment increases is borne out by data assembled in *The 1956 Survey of Dental Practice*[1] by the Bureau of Economic Research and Statistics of the American Dental Association. This survey revealed that the mean net income of a dentist with one assistant was about 50 per cent higher than a dentist without an assistant, and that the mean net income of dentists in offices with three chairs and two assistants was nearly two and one-half times the mean net income of dentists working alone.

The foregoing discussion has referred to hourly costs without regard to the kind of service being rendered. It has also referred to the hourly billing which is necessary to produce certain levels of income for the dentists. It might be inferred that all kinds of service should be charged for on a flat rate basis per

1. American Dental Association, Bureau of Economic Research and Statistics. The 1956 survey of dental practice. Chicago, American Dental Association, 1957.

hour. However, that is not a necessary conclusion to be arrived at from a study of hourly costs. There are considerations involved in rate setting other than the costs involved. There are certain services which require more skill than others. There are certain services which logically can be said to be more valuable to the patient from the standpoint of his health and well-being. It may be argued that the patient should be encouraged to use certain services which will maintain his mouth in a healthy condition. Setting a relatively lower charge for such service is an encouragement.

If it is desired to have a schedule of charges based on other than an hourly cost basis, a weighted schedule of services must be set up to assure that the over-all charge schedule will cover all costs and also will provide the desired income.

For example, it may be assumed that all services of a general practitioner could be divided into three groups from the standpoint of assigning different values for each hour of service.

Group I: (Assign a weight of 1)

Services to be encouraged for individual's benefit

Services requiring least skill of the dentist

Group II: (Assign a weight of 1½)

Services of an intermediate nature considered more valuable and requiring more skill than those in the lower group

Group III: (Assign a weight of 2)

All other services to be charged for at highest rate

If it has been decided that the amount of income required is $45,000.00 or $15.00 per over-all patient hour, the individual hourly charges will have to be reassigned as follows:

Estimated patient hours	Group I,	1,500 x 1	= 1,500
Estimated patient hours	Group II,	1,000 x 1½	= 1,500
Estimated patient hours	Group III,	500 x 2	= 1,000
Total patient hours		3,000	
Total weighted hours			4,000

The basic hourly charge will be $11.25 an hour ($45,000 divided by 4,000 hours). This means services in Group I will be charged for at rate of $11.25 an hour, those in Group II at one and one-half times that rate, or $16.87½. Group III services will be priced at $22.50.

It will be observed that these rates are based on estimated patient hours. If the actual patient hours differ materially the rates will require adjustment accordingly.

Although the immediately preceding illustration suggests a means by which flexibility may be introduced into rate setting, it must be remembered that cost, and even cost per hour, is the focal point about which all rates must be set to provide for profitable operation.

APPLICATION OF FEE DETERMINATION PRINCIPLES IN CASE PRESENTATION TO INDIVIDUAL PATIENTS

Harry M. Klenda, D.D.S., Wichita, Kan.

It is agreed that dentistry is faced with a job of providing more and better service at a cost that is equitable, acceptable and profitable. Educating the public to the value of dentistry deserves long-range thinking, planning and follow-through. It follows, logically, that care, skill and judgment in operative procedures must be accompanied by efficient practice administration at the practitioner's level.

There are many questions concerning patient education, fees, public relations, methodology of work. Some of these and possible answers could be listed as follows:

1. What is most essential for good case presentation?

The essential for a good case presentation is thorough and complete diagnosis. The dentist must know the case before he can present a treatment plan.

2. What do you consider a complete diagnosis?

A complete diagnosis is a very broad term that must be clearly understood and applied. A thorough diagnosis is knowledge of the true condition of the mouth health and its relation to the whole person. This knowledge can be attained only through complete oral examination.

3. What constitutes a complete examination of the mouth?

Briefly, the basis for a complete examination of the mouth includes the following: (a) thorough clinical study of all conditions as observed through use of mouth mirror, explorer point, dental floss, and so on, of all teeth, their supporting and related structures; (b) complete roentgenograms of roots and edentulous regions, also bitewing views; (c) complete and accurate study models which capture and register movements of the mandible to observe as accurately as possible occlusal equilibration and function; these models are to serve as treatment planning models coordinated with all other observations; (d) vitality tests (thermal and electric) to determine pulpal health condition; (e) exploratory operative procedures to study further the more unpredictable conditions; that is, removal of crowns, deep-seated restorations, and so on; (f) transillumination of all regions to analyze hard and soft tissue tone and health; (g) careful clinical inspection of all supporting and related tissue with biopsy, if necessary, in suspected regions.

4. Why is it necessary to make such a complete examination and study?

On this diagnostic examination, operative factors are dependent if optimum oral health, rehabilitation and maintenance are to be achieved.

5. Should the dentist make a complete examination in all instances?

To gain and maintain optimum health for each patient, the dentist should recount and perform the series of events necessary. He cannot plunge headlong into work and expect patients to accept treatment and fees without question. He should not, because of poor and incomplete examinations, fail to explain thoroughly, leaving patients in a position either to accept blindly or to oppose his recommendations.

6. Should the patient (in case of an adult) or parent or guardian (in case of a child) know the true condition of the mouth?

In order to educate the patient properly regarding the value of good oral health and to facilitate case presentation,

Past president, American Academy of Dental Practice Administration.

he should be informed of the true condition of the mouth.

7. What is meant by patient's attitude?

Some people are calculating buyers and will bargain and dicker; however, even this type, like most types of people, recognizes true value if the dentist, fortified by sufficient knowledge, speaks in terms of returns in health, comfort and esthetics. Patients evaluate their dentists on the basis of quality and "know-how" when, by a comprehensive presentation, they are given a chance to know the true condition of their oral health, and what it means. There would be fewer doubts in the minds of patients if the dentist would go beyond the mirror and explorer point type of oral examination. Therefore, to recommend proper treatment and to give justifiable and fair estimates, both the dentist and the patient must know the situation.

8. What is the result of successful patient education and fee presentation?

To sustain patient interest throughout, health and other benefits should be in logical order. Sound education and fee presentation will send each patient home satisfied with what he has learned. He will have a full understanding of and a basis for justification of the monetary rewards to the doctor.

9. What is the value of total dental care?

Most patients recognize their dependence on oral health. The taking for granted that every patient holds the dollar above his own personal welfare should be forgotten. The patient, when made to understand the great importance of possessing normal oral conditions, will acquiesce readily to recommendations made by the dentist for care of the mouth.

10. Should the dentist support his total care program with a maintenance care program?

Every practitioner should stress maintenance care as prevention of disease.

11. What constitutes prevention and maintenance care, often called the recall program?

Regular and periodic prophylaxis with clinical and roentgen-ray studies, as necessary and governed according to each patient's condition, constitute a preventive and maintenance care program.

12. If all necessary prophylaxes and roentgenographic examinations are given, what per cent of the practice develops into a maintenance program, in dollars and cents?

About 25 per cent of the practice develops into a maintenance program. For example, if, in a $40,000 practice, a dentist schedules prophylaxis and necessary roentgenograms as part of preventive dentistry (recall), he realizes about $10,000 from those services.

13. What per cent of time in the foregoing example of practice is consumed in rendering the services mentioned?

About 35 to 40 per cent, which is chair time, is consumed.

14. If the so-called recall program is judged to be unprofitable, then, is it not better from the economic viewpoint to eliminate a preventive program from the average dental practice?

No. Fees for prophylaxis and roentgenograms used for preventive diagnostic purposes should be re-evaluated and should be in keeping with fees realized from other services rendered. It is up to the dentist, and the dentist only, to educate his patients properly and to establish a proper balance of fee remuneration for all services. Prophylaxis should carry its fair share.

15. Is it fair to neglect or deny such recall preventive service to the patient?

The most important person in dentistry is the patient. Those who are interested in and accept a total care program, willingly accept dentistry as a very important factor in maintenance of their total health. Frequently, the patient's investment in dentistry depreciates rapidly as a result of improper maintenance care

with serious harm to optimum dental and total health.

16. When does a practice warrant the use of a hygienist?

A practice warrants the inclusion of a hygienist when the recall program reaches a point where prophylaxis services tend to crowd out patients who need restorative and prosthetic work and new patients who wish to matriculate for the dentist's services—or a practice warrants a hygienist when a dentist tends to neglect the recall program of prophylaxis in order to take care of the restorative and prosthetic work and new patients who wish his services. The time devoted to and the income derived from giving of prophylaxis should be analyzed to adjudicate the need for and compensation possible from added auxiliary help.

17. If a hygienist is employed to do prophylaxes, is it not true that the quality of such services is expected to be lower?

It is not true. The hygienist must be capable of rendering equal and even better service than her dentist employer—better service because she will have the advantage of gaining experience through repetition, thereby increasing the quality.

18. Should a dentist take a chance by employing a hygienist who, as a rule, is not a career woman? Why be bothered with changing personnel?

The problem of changing personnel is something the profession has to accept. It is hoped that schools will soon accept men as students and that state boards, too, will act accordingly, thereby achieving a greater stabilization in this field of auxiliary help. However, there are arguments pro and con.

19. Since the hygienist does the work of a dentist by taking over his recall program, is it not fair that her income be the same as the dentist's?

No. The educational requirements for the dentist are much more costly and time consuming. The hygienist has no investment in equipment and has fewer costs for postgraduate education. Too, the dentist must assume full responsibility for all work done by the hygienist.

20. Should the hygienist limit her services to prophylaxis only?

The hygienist is not trained or in any way licensed to do other work. Her chief services are patient education, prophylaxis and, in some instances, roentgen-ray photography. Likewise, depending on the wishes of her employer, she can do chair assisting, laboratory, secretarial and other auxiliary work ably.

21. Is the hygienist's salary included in the hourly operating cost of the dentist?

Hygienist income, resulting from services as a full-time hygienist, is not included in the hourly cost of the dentist. The record of production, patient schedule and expense should be kept separate and apart. The hygienist department must carry its proportionate expense regarding rent, secretarial service, equipment, laundry, and so on, which is chargeable against the income from prophylaxis. The hygienist is unlike the assistant whose salary is charged against the hourly operating cost of the dentist.

22. Is there a difference in determining fees for dental service and in establishing selling price for a business commodity?

Dentists know that dental service must be exchanged for money. When such a transaction takes place, the professional service becomes a product with market value and must be studied as other products are studied. However, it differs from a commodity in business in that the professional service has as its primary objective the rendering of a valuable health and esthetic service.

23. Should a dentist charge for examinations?

A fee commensurate with the quality of the examination should be applied in every instance. The quality of the examination should be a full prelude to a picture of the true condition of the mouth

and its relation to the well-being of the total health of the patient. The established policy of the office in regard to examination should be made clear to the patient in order to ensure a full understanding of the fee. For example, a mouth mirror and explorer point examination carries a lesser value when compared with the examination that also includes complete roentgenographic diagnosis, treatment planning models, vitality tests, transillumination, exploratory operations, and so on. The nature and thoroughness of the examination should be presented to the patient in full, justifying the fee to the fullest extent.

24. Is there anything wrong with giving free dental examinations?

There are many reasons why the giving of free dental examinations is not recommended, among them the following: (a) this procedure encourages patients to shop around; (b) the varied opinions they get will cause them to take very little interest in the free findings even though beneficial to them; (c) there is a tendency on the part of the contributor to such a cause to become lax in this important and time consuming service, and (d) many patients will suffer the burden of inadequate dentistry.

25. What other advantages may be cited for making a good examination?

There are many benefits to be gained from making a good examination; for example, (a) on the basis of each examination, the dentist can figure the fee more accurately—the fee, once established, is difficult to change or readjust; (b) it enables the scheduling of chair and laboratory time for the doctor as well as time scheduling on the part of the patient.

26. How many productive hours can a dentist expect out of each year?

It is generally estimated that a dentist has 1,200 to 1,800 productive hours in a year.

27. What is a productive hour?

In a book entitled *Practice Administration for the Dentist*,[1] the following definition of a productive hour is given, "A productive hour is a unit of time for which a fee can be charged."

28. Should a charge be made for treatments, examinations, cleanings, placement of cement bases, adjustments, make-overs, or relief of toothache?

Fees are justified for all services that are beneficial to patients and that require the skill of a dentist. Accurate accounting records of time spent in performing these services should be kept and charges computed accordingly. No practice should be cluttered with nonproductive hours, the burden of which is carried or loaded onto productive items.

29. What principles must be remembered in determining fees so that they are in keeping with present economic inflationary trends?

Costs are changing constantly, particularly living costs. Larger amounts of money are invested in equipment and instruments to render professional services, resulting in increased cost of time. In addition, consideration must be given to the initial expense of obtaining the degree of Doctor of Dental Surgery. Many other direct and indirect factors influence the cost of doing business in the dental office, such as cost of transportation, laundry, dress, housekeeping, and so on. Through the years, business methods change but little. In all events, those employed in the dental practice must be in keeping with the highest ethical standards of the profession. Good bookkeeping methods covering time and cost of rendering service are a must. With good records, the dentist can adjust his fees to meet changes often referred to as changing and creeping overhead.

30. Since the dentist, particularly in general practice, performs a large variety

1. Mann, William R., and Easlick, Kenneth A. Practice administration for the dentist. St. Louis, C. V. Mosby Co., 1955, p. 204.

of services, how does he determine what items must be upgraded or lowered in a fee schedule?

To adjust a fee schedule, the doctor must analyze his production cost for each operation carefully. A service produces a profit only when the fee received covers fixed overhead expenses for time consumed in performing the particular service, pays for materials used and allows for a net profit to reimburse the doctor for his time, care, skill and judgment. For example, the production of a mesial-occlusal-distal inlay requires more than would be covered by the fabrication or laboratory cost and cost of gold alone. The out-of-pocket cost includes certain expenditures for anesthetics (two sittings), impression materials, materials for temporary coverage or stopping, carbon paper, cements, waxes, dental floss, sandpaper disks, stones, burs, bases, medications, to mention a few. Analytical records, for say 20 such particular operations, should be kept and watched in detail. They will provide a basis for determining unit material cost. It is very important to keep an accurate record of the time utilized in producing these 20 inlays. Addition of the fixed hourly operative overhead of the office will make it possible to figure quite accurately the production cost per such unit. This analysis, plus consideration of the intangibles for dentist's care, skill and judgment, should lead to a fair fee with reasonable profit for the dentist. This approach may appear to be a long way around, but basically it is cost accounting, and necessary, if the dentist desires to establish a fair and equitable fee schedule.

31. How much is the productive time of a dentist worth per hour?

The dentist must be somewhat philosophical and yet practical in determining his hourly worth. The dentist, self-employed, moderate in his socioeconomic status in the community, is allowed a fair yearly return for his services to his patients. If such a figure is $15,000 per year, on the basis of 1,500 productive hours per year, his hourly net before taxes should be $10 per hour. Of course, these figures are variable, depending entirely on the experience, physical set-up and clientele he attracts and the service he renders. If he is operating on a 40 per cent overhead basis, the gross practice in the example that is cited here would be $25,000.

32. What effect does experience have in developing and preserving a dental practice?

Experience is relative and should be qualified to a certain degree. The question may be answered on the basis of progressiveness. For example, a dentist may enjoy gainful experience in one year of practice but if not progressive, he will find himself on the same level at the end of ten years. Thus, he merely has one year of experience spread over ten years. On the other hand, the progressive dentist over ten years finds himself practicing productively through continued upgrade, giving fuller measure of value to his patients. Over ten years he is truly a dentist with ten years of experience instead of one year's experience divided by ten.

33. Are high fees necessary?

The practice of dentistry can be made profitable by applying consistent fees to all services requiring the skill of a dentist. High fees attract only a limited class of people, and it places the practice in a dangerous position, unless the dentist has a large following of such clientele.

34. Are high fees contested more than low fees?

Fees, high or low, are contests because cases are started blindly without the patient, and sometimes the dentist, realizing responsibility at the outset. Everything works out best with a plan. Plenty of time should be taken for diagnosis and case presentation in order to register more favorably with the patient, thus saving time and misunderstanding.

35. Are low fees best? Do they attract patients?

Honest, optimum service deserves a fair profit. Patients attracted on a money basis are usually unsatisfactory, and services so rendeded lost quality. When health, comfort, and esthetics are at stake, genuine skill deserves a good fee.

36. Should laboratory costs multiplied by three or four times be a basis for prosthetic fees quoted to the patient?

Fees are inadequate most often when based on mechanics and materials alone. Operative proficiency and skill are necessary, and the dentist's knowledge of the basic sciences must be taken into consideration in establishing fees. To this should be added the costs of materials and fabrication costs to establish a rational fee for prosthetic restorations. The impression the dentist gives of his ability to produce a prosthetic appliance in each particular instance governs the patient's opinion of whether the fee is justified—not the materials used.

37. Should local, district and national dental societies employ press agencies and other means for developing what amounts to practice-building campaigns?

The daily press, magazines, periodicals and other media are supplied with information by societies for dissemination. This procedure is helpful in stimulating interest and, to a degree, in molding public opinion. However, no amount of such publicity takes the place of 100,000 dentists, with their office teams, in reaching the individual. The responsibility of a better dental health campaign to create interest in problems of dental health and oral hygiene rests primarily with the individual dentist who must educate the patient. The dentist's social and professional conduct keeps dentistry on parade. In consequence, the satisfied and well educated patient is made a missionary and booster for dentistry. The dentist seeking better patient public relations for the cause of dentistry and for building a practice can start, therefore, with the patient in the dental chair. Theorizing, 100,000 dentists times ten patients per day amounts to the education of one million people.

38. What is the particular value of using high-speed rotary instruments in operative dentistry?

The operator expends less time and effort in doing work as compared with that required by the ordinary engine and handpiece. The pressure applied and the touch are lighter. The vibrations produced by high frequency equipment have a low to neglible threshold of vibration perception.

39. Since time and effort are lessened for the operator by the use of high speed equipment, can fees be lowered appreciably for operative dentistry?

The cost of obtaining and maintaining such equipment contraindicates any change in fees per unit of services. More preparations can be produced per given amount of time with less strain to the patient, and the preferred benefits and service to the patient are thus increased in value. Instead of lowering the fee for these valuable benefits, the gain is credited to the dentist who is able to do more units of work per given amount of time. Hence, both the patient and the dentist benefit noticeably with no appreciable change in the fee schedule. It must be remembered, moreover, that use of both technics—high speed and ordinary engine and handpiece—enhances and maintains efficiency and quality of service.

40. Does the use of a dental assistant or assistants improve productivity and income?

The increase in efficiency through proper use of auxiliary help is generally accepted. Greater productivity and income can be expected with well organized help. The dentist's skill should be used in doing the things that only a dentist can do. All other motions can be delegated to efficient help.

41. What are some of the employer requisites for proper use of auxiliary help

The requisites necessary in a dentist if he is to make proper use of auxiliary help may be listed as follows: (a) He must have the ability to make proper selection of personnel on the basis of well-groomed appearance, patience and fortitude, emotional stability, enthusiasm, initiative, loyalty to the dentist and his profession, alertness, progressiveness, and punctuality; (b) he must be able to analyze and, if necessary, improve the quality of his teaching; (a well balanced cultural and educational background supported by clear and purposeful directives will motivate the instruction and training program conducive to first class assisting); he should certainly have basic leadership qualities; (c) he must possess a good imagination and think soundly; he must know personally what standards and policies are vital in all phases of routine services that can be delegated; he should be able to give instructions clearly; he must be able to communicate; he must inform the personnel tactfully of their progress, good or bad.

42. How great is the shortage in number of dentists?

There is no particular shortage in number of dentists. There is a weakness on the part of some dentists in arousing and developing their potential.

43. Does an office with multiple operatories and an adequate cordon of well trained auxiliary personnel produce accordingly?

Usually yes. The expansion depends on the dentist's imagination, experience, his follow-up program and his organizing ability. There is no limit to what a dentist can do in productivity and income with regard to an efficiently designed physical plant and trained personnel.

CONCLUSION

The logical approach toward consistency in fees is through consistent and thorough examinations and diagnosis. In this regard, there are too many irregularities and inaccuracies on the part of the profession. It would be unreasonable as well as futile for dentists to attempt standardization of fees, but they have the right to qualify and upgrade the quality of oral surveys.

A more precise way of establishing justifiable fees has been presented as well as material for true patient education and a basis on which to plan operative proficiency and to achieve optimum dental health. Such thorough treatment is preventive as well as corrective, with lower dental cost the end result.

First National Bank

APPLICATION OF FEE DETERMINATION PRINCIPLES IN GROUP PURCHASE: ROLE OF STATE DENTAL SOCIETY

William P. Brust, D.D.S., Everett, Wash.

In discussing the application of fee determination principles in group purchase, the necessary objective is the traditional doctor-patient relationship. Therefore, before discussing the position that a third party plays in obtaining dental care for groups, it would be advisable to consider the traditional relationship between the dentist and his patient.

In the traditional relationship, the patient contacts the dentist and signifies

Member, Council on Dental Health, American Dental Association.

his desire for treatment. The dentist proceeds to make his examination and diagnosis and then presents his proposed treatment plan to the patient. At this time, the cost of the proposed treatment usually is discussed. If the patient is of the opinion that such treatment is necessary or desirable, the decision to proceed with the treatment will depend on the cost and the method provided to pay for such treatment. The fact that the Ninth National Dental Health Conference is the third consecutive one to devote a major portion of its agenda to the methods of paying for such dental care would indicate the interest of the profession in assisting the public to meet the cost of dental care.

The influence that the cost of dental care and an understanding of such cost may have on the patient in the selection of treatment is impossible to measure accurately; but most certainly it is ever present. Therefore, in summarizing the traditional dentist-patient relationship, the following factors can be noted: First, the patient contacts the dentist. Second, the dentist must make an examination and diagnosis, render a treatment plan and establish a fee. Third, the patient must accept each of the foregoing factors and arrange a suitable method of payment before treatment may be initiated. Now, how does this traditional dentist-patient relationship differ in the group purchase programs for dental care?

In the group purchase of dental care, the element of acceptance of the fee and method of payment is removed from the patient and placed in the hands of a third party. The decision of the patient to proceed with a recommended treatment plan is then not greatly influenced by an economic factor. The limitations of the program in regard to dental treatment, commonly called "exclusions," are known to both the patient and the dentist. The relationship then becomes one based primarily on the treatment plan itself.

Although this description may be an oversimplification, most programs do not offer full treatment, and, therefore, the traditional relationship will again be present when the dentist and patient discuss necessary items of treatment which might be excluded by the program. However, in the treatment provided under a group program, the traditional concept of dentist-patient relationship has been altered by the removal of economic responsibility of the patient.

Before this statement is challenged, it should be stated that the patient under some programs may have an indirect responsibility. This situation is particularly true where the patient may pay a premium, as under a true prepaid program. In employer-employee welfare fund programs, the patient has participated in payments to the welfare fund through a deduction on a per hour basis of employment. In these instances, however, the responsibility is indirect and has been transferred to a third party. The psychological factor of direct responsibility for payment has also been shifted from the patient.

When the mechanism for the group purchase of dental care is studied more closely, not only is the interjection of a third party found, but also a fourth party. Actually two additional parties have entered into this relationship. The first of these is the group purchasing the dental care for the patients. It has been recognized that individuals may act differently when they become identified as groups. Their emotions and actions as a group may vary from their actions as an individual. They will often take action in the name of a group under the theory of democratic action, with which many, as individuals, would not fully agree. In addition, they have joined as a group so that the risk of the individuals might be shared by all. This sharing of the risk by grouping is, in itself, important. This, then, is the third party—the group responsible for purchasing dental care for its individual members—they may be called agents of the group desiring to

purchase dental care on a group basis.

The second additional party entering into the relationship to provide the administrative functions of the program becomes the agent or agency for the dentist in providing dental care. This may be a commercial insurance company, a dental service corporation, a closed panel clinic or a similar agency. This fourth party acts as the administrative agent in making agreements as to the scope of the dental program as well as the cost and, further, determines that treatment specifically outlined by the program is provided and that payment is made to the dentist

In examining this matter, it can be seen that the dentist and his patient have been separated by interposing two additional parties to manage the economic aspects. The separation is complicated by the fact that the dentist and the patient are individuals and that their actions conform to the pattern normally present in individuals. Moreover the separation is made by agencies or groups composed of many individuals acting as a body with a multiplicity of emotions and actions. Add to these complexities the factor that the separating groups deal primarily with the subject of economics and many of the problems of group dental care then become self-evident.

At first it would seem that dental treatment performed under group programs should be more desirable than that provided under the traditional concept of normal dentist-patient relationship, since neither the dentist nor the patient need be concerned primarily with the economic aspect. However, under close examination it can be seen that the aspect of economics has not left the picture completely but has been transferred to other hands—and a multiplicity of hands at that.

The problem would be lessened if it were possible to draw a definite line and separate dental treatment from dental economics. Dental treatment could be called "white" and dental economics "black," but, unfortunately, there is no distinct line of separation. Instead there is a large area which becomes "grey," and it is in this area that fee schedules so often fall. Also it must be recognized that other problems can be found in this "no man's land" between economics and treatment where the third and fourth parties enter into the picture.

ROLE OF DENTAL SOCIETY

No mention has been made up to this point of the dental society or the dental association. The third and fourth parties afore-mentioned are both entirely apart from the organized dental society. The part the dental society plays in this relationship between these various groups and individuals is one that is not easy to separate for clinical study. Therefore, an examination of the dental association or society would seem to be indicated at this point.

The dental association is composed of individual dentists. It is a separate legal entity which, under its bylaws or articles of incorporation, may take certain actions as a group in the name of its individual members. What should these actions be in regard to group dental programs?

In Washington State, after several years of study and experimentation, a policy was adopted recently that is briefly as follows:

1. The association, through its dental care committee, has a responsibility for studying all group dental care programs and maintaining a file on each program.

2. It may, by resolution based on information obtained by the dental care committee, state that a group dental care program is "approved" or "not approved" by the Washington State Dental Association, based on whether or not the program conforms to the standards for group programs which have been established by the American Dental Association's House of Delegates.

3. The association shall take no part in the administration of such programs

nor in the negotiations to establish such programs.

4. Recognizing a responsibility to the Service Corporation which was formed at the request of the Washington State Dental Association, it shall assist by recommending names of dentists to serve as trustees of that corporation. However, this is only a recommendation and the relationship between the association and this corporation is a liaison for informational purposes only and not one of control by either party over the other.

5. Finally, it is recognized that the profession's control over such programs rests primarily through the individual dentist and his conformance to the *Principles of Ethics* of the American Dental Association as interpreted by the Washington State Dental Association.

It becomes evident that in Washington the association is concerned with obtaining information and making it available to the profession and the public, determining if a group program meets the standards of acceptability of the A.D.A. for such programs, and, finally, with its individual members and their actions as dentists. Thus, in the State of Washington, the Washington State Dental Association is separate from all programs, yet it may act as a judge over the actions of its members who may be participating in such group programs.

This operation may not be ideal, but it is a method that has been developed to answer the problems that exist in an area where group dental care programs are operating and where they have been in existence for several years. In other areas, the dental societies have taken part in the development of a fee schedule and in the actual administrative actions of group programs. There is little doubt that such a relationship brings closer control, but it would also seem that problems would be developed in this relationship.

Since I am most familiar with the agency that I have worked with as a trustee—the Washington State Dental Service Corporation—my examples will be taken largely from its experience. The Washington State Dental Association has adopted a policy that a survey of dental fees throughout the state will be made by the association at least every three years. These figures are published as a portion of a manpower survey made by the association.

The responsibility of developing a fee schedule for the use of a group program is not a responsibility of the dental association, but it is the responsibility of the individual group program. We do not desire to have the state dental association in a position of approving, in any manner, the fee schedule for commercial insurance companies, lay dental programs or dental service corporations. That evaluation is their responsibility. If their schedule does not reflect actual fees for adequate dental care, we can "disapprove" the plan under the standards of acceptability established by the American Dental Association.

However, the association does have the responsibility of meeting with groups seeking care and educating them as to what may constitute "adequate dental treatment." This education can be done only as a portion of a continuous program of public relations by the association and its effective committee concerned with this responsibility. In Washington, the association, in meeting with groups desiring information, spends much of its time in this type of education. The association has published a pamphlet describing standards for selecting a group dental care program, and more than 25,000 of these pamphlets have been distributed to date. The association responsibility is one of general information—seeking, analyzing and making suitable information available to the general public, individuals and groups.

I would like to clarify that the problem of fee schedule determination for an individual program as well as the premium charged is the responsibility of the ad-

ministrative agency and the group seeking to purchase dental treatment, as well as the individual dentist who may participate in the program. If they meet the general standards of acceptability in Washington State, we take no additional action. However, the publicizing of our standards through a program designed to reach the public provides a contact and a control that is as effective as our control over our members and the reasonableness of our standards and our actions.

I hope from this explanation that I have made clear that the relationship between the dental association and groups is one that is quite complex. We may not be in agreement on specific aspects of that relationship, but I am sure we will agree that there must be a definite, concrete relationship for the guidance of all groups concerned, since, in its complexity, we have the dentist, his patient, the group purchasing dental treatment, the administrative agency and, finally, the dental society or association. Traditionally, the only time the association or society enters into the dentist-patient relationship is when a grievance is presented. Our experience shows that this practice is desirable, but it often creates problems when the attempt to negotiate between dentist and patient is made. Now, we have entered into the phase where we are discussing the dental association as an additional party in the dentist-patient relationship which already has two such additional parties. If unnecessary friction is to be avoided and the dentist allowed to have a somewhat traditional practice, we must make certain that the rules are clear cut and in the best interest of the two individuals most concerned—the patient and the dentist.

The final area that will be discussed is quality control. This, again, is a factor that is not normally found in the traditional dentist-patient relationship. Occasionally, complaints concerning quality of dentistry have been brought before the judicial or grievance committees, but generally, it has been found that the complaints were based on misunderstandings concerning fees. All dentists are aware that to judge the quality of another man's treatment is extremely difficult; yet today, groups seeking dental care who are responsible for the economic aspects of the program are requesting assurance that the care be adequate and that the quality of treatment be maintained.

In the traditional concept, the patient usually felt that quality was adequate if the pain ceased, if the restoration did not fall out or if he could eat corn on the cob without his dentures slipping. In other words, it was a personal or individual evaluation of quality.

Today, the group seeking to purchase dental treatment is not in a position to provide such personal evaluation, and so requests are being made that quality controls be instituted.

These controls generally require that some type of screening or checking procedure be established. The procedure might be, as in Washington State, a random sample of completed treatment as well as any treatment that may be questioned by the dental director of the program. Those patients chosen in the random sample of completed treatment are sent to a screening dentist for his determination as to acceptable quality. In other states, at the close of a contract year, a sample of the group is requested to have a dental survey of its needs by a selected group of dentists or through a school of dentistry.

The third method of quality control is that provided by the dental director in the closed panel program who oversees treatment performed in the clinic. A fourth possible solution to the request for quality control might be the exclusion of any controls whatsoever on the basis that quality control does not generally exist in the traditional dentist-patient relationship. Yet, could such exclusion be considered a solution when, through our dental societies, we see examples of dis-

satisfied patients — dissatisfied patients who refuse to pay for dental treatment that they feel is not adequate? It would seem that the payment of a fee in the traditional manner of practice was in itself a certain degree of quality control. Now that this economic factor between the patient and the dentist is removed, it is reasonable to expect that this assurance of quality should be assumed by the administrative group administering the program, is it not? This is a question that needs discussion and a sound answer.

In Washington, as I have stated, we use the screening method. It has proved satisfactory. One dentist did not like the name "screening dentist" and requested that we rename such individuals "consultants." We have found it necessary to remove only three dentists from our program in four years, and we have called two others before our advisory committee to request that they either change certain office administrative procedures or redo treatment which was not felt to be of suitable quality. In general, we have had no complaints from participating dentists or contracting groups.

It should be made clear that this program is entirely a responsibility of the Washington State Dental Service Corporation and not of the Washington State Dental Association. Twice, other group programs have requested the association to screen their treatment, and we have taken the stand that it is not a responsibility of the association to determine the quality of the care provided by individual dentists or groups. We will study any programs to assure quality of treatment established by any group and report whether the program appears to be adequate or inadequate; but we will not take part in the actual determination of the quality of the individual treatment.

In some states, the association has found it advisable to provide a panel to do the screening and issue a statement as to the quality of the treatment. It appears to have been accomplished successfully, where this has been done.

Determination of quality may bring many interesting questions into the picture. These may include definition of what adequate dental treatment may be, as well as the establishment of quality standards. One cannot measure without having a rule or standard by which to measure. This rule is one of the most difficult things to devise, and should be made definite. Just as important as the rule itself, however, is the man who applies it. Screening dentists can be invaluable if they are given full instructions and if they are selected on the basis of integrity, judgment and diplomacy. In Washington, we have been fortunate in the selection of screening dentists, and those who have proved that they cannot meet the standards of the program are not continued as screening dentists. They are paid on a fee-for-service basis, and the costs of necessary roentgenographic examinations are allowed.

The use of screening dentists in the determination of standards is a comprehensive subject, and it is wiser either to touch on it lightly or to discuss it in full detail. Space does not permit the latter.

SUMMARY

The new relationships that enter the picture when group purchase becomes a vehicle for providing dental care have been touched on briefly. The place of the dental association in this relationship is one that is new and complex, and one that is being shaped by activities in these new programs as they develop. It would seem that no hard and fast policy can be given immediately, but we must proceed with caution and develop that policy. The new relationships are all important, since they will decide to a great extent how fee schedules shall be determined and the method of quality determination that is desirable. Until thinking has crystalized into a broad

over-all policy, it will be difficult to state what is correct.

We can compare ourselves with Columbus. We have sailed out over a broad uncharted sea of a new type of dental practice. We have left our traditional routes, and we find that the maps we now possess as a guide either are designed by individuals who are not familiar with the geography before us (since this is an uncharted course to all), or they are provided by people who have sailed over similar seas but who are not quite sure just how comparable was their voyage.

Our responsibility is to study these maps, since they are the best available; to proceed with extreme caution where it seems desirable, and to chart our course completely as we travel on, so that those behind can take advantage of our success or failure. To make such a chart, we must know certain fundamentals of navigation. With the use of proper tools and the development of a guide, we can be partially assured that dentistry will move forward in the direction that is in the best interests of the public and the dentist.

Medical Center

Practical Goals of Higher Education • Secondary and higher education in America has been increasingly oriented toward the "practical," defined mainly in terms of work. This has been the main orientation also of the bulk of adult education in the United States. There can be no denying the importance of vocational, technical and professional competence. There can, indeed, be no quarrel with a high regard for the practical, provided it is not so narrowly defined as to be self-defeating. The worker—vocational, technical, professional—is also a person; the values that give meaning to his life, including his work, are to be found in the realm of his private life. The worker, however, is also a citizen; decisions in the public realm affect all aspects of his life, including his work. Because it deals with questions of meaning and value, continuing liberal education is, in the largest sense, the most practical kind of education. *G. Scott Fletcher. Continuing Liberal Education.*

Control of dental anxiety with mephenesin

Harold Sherman, D.D.S.; Joseph E. Fiasconaro,* D.D.S.; Edward A. Cain, Jr.,† D.D.S., and John W. Fertig,‡ Ph.D.*
New York

A double blind study was made of the ability of mephenesin, in doses of 0.50 Gm., to obtain relaxation in dental patients who exhibited obvious apprehension. Half of the 102 patients received mephenesin and half a placebo. No significant difference in the degree of relaxation obtained with mephenesin and a placebo was observed.

The control of patients' apprehension before and during the dental appointment has been a problem that is as old as dentistry itself. Dentists have attempted to minimize their patients' fears by subtle technics. The decor of many offices has changed from the cold "hospital white" to warmer and more colorful surroundings. Music is used in reception rooms and in treatment rooms. More attention is focused on the doctor's "chairside manner."

Less subtle technics have involved drug therapy for premedication. Barbituric acid derivatives have been employed, but since the administration of these hypnotics and sedatives to ambulatory patients necessitates the use of escorts, they have been employed infrequently.

Then a drug appeared which produced relaxation without interfering with the voluntary functions of the patient. This new material, mephenesin, seemed suitable for the ambulatory patient.

The object of this study was to evaluate clinically the use of mephenesin for anxious patients in operative dentistry.

DESCRIPTION OF DRUG

Mephenesin, an alpha-substituted glycerol ether, was first synthesized by Berger and Bradley[1,2] in 1946, as 3-(ortho-toloxy)-1, 2-propanediol. The specific effect of mephenesin is the relaxation of skeletal muscle, which is achieved by a selective blocking action on the internuncial system. The blocking action appears to be predominant in the cord, but a definite action on the brain stem is also present. Since mephenesin does not affect the cortex, in therapeutic doses it will not

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*Assistant clinical professor of operative dentistry, School of Dental and Oral Surgery, Columbia University.

†Associate professor of operative dentistry, School of Dental and Oral Surgery, Columbia University.

‡Professor of biostatistics, School of Public Health and Administrative Medicine, Columbia University.

1. Berger, F. M., and Bradley, W.: The pharmacological properties of Myanesin, Brit. J. Pharmacol. 1:265, Dec. 1946.

2. Berger, F. M., and Bradley, W.: Muscle relaxing action of Myanesin, Lancet 1:97, Jan. 18, 1947.

cause loss of consciousness or interfere with voluntary function. The drug also has a general tranquilizing or sedative effect.

Mephenesin is available in tablet form, (0.5 Gm. and 0.25 Gm.); capsules, (0.25 Gm.); and as an elixir, (0.1 Gm. per cubic centimeter). The material used in this study consisted of capsules of mephenesin 0.25 Gm. with 5 Gm. of glutamic acid hydrochloride (a combination marketed as Mephate by the A. H. Robins Co.). The glutamic acid hydrochloride reputedly increases the solubility and absorption of mephenesin in the gastrointestinal tract.

PROCEDURE

The study was limited to patients who exhibited obvious apprehension. By means of a prearranged randomized scheme, each patient received a sealed, coded envelope containing two capsules, about 20 minutes before the dental appointment. The envelope was attached to a card to be filled in by a member of the operative dentistry evaluating team. Half of the capsules contained the active drug, the remaining half the placebo. No member of the evaluating team knew which capsules contained the drug nor which contained the placebo. The degree of relaxation was recorded as ++, +, or −, signifying definite relaxation, slight relaxation and no relaxation. These recordings represented the subjective observations of the evaluating team, and are shown in the table.

RESULTS

The results in terms of degree of relaxation do not differ significantly for the mephenesin group as opposed to the placebo group. The probability of getting such differences (see table) by chance alone is great (chi square with two degrees of freedom is 2.2).

Table • Degree of relaxation effected by administration of mephenesin or placebo to 40 patients in 102 visits

Degree of relaxation	Administrations of mephenesin		Administrations of placebo	
	No.	Per cent	No.	Per cent
++	21	41.2	16	31.4
+	21	41.2	20	39.2
−	9	17.6	15	29.4
Total	51	100.0	51	100.0

If the scale of relaxation is made dichotomous (++ vs. + and −), then 41.2 per cent of the mephenesin administrations, and 31.4 per cent of the placebo administrations are ++. However, this is by no means significant; the probability of getting this by chance alone is about 30 per cent.

SUMMARY

In evaluating the results of this study, one must consider the fact that a comparatively low dose of mephenesin was administered (0.50 Gm.). The doses were kept minimal because the subjects were unescorted clinic patients. Eskin[3] employed mephenesin therapeutically prior to oral surgery in doses of 0.5 Gm. per 50 pounds of body weight. He recorded "adequate relaxation in 49 out of 57 patients showing either moderate or great apprehension."

This study, employing the 0.5 Gm. per person dose, yielded no significant difference between mephenesin and placebo when administered to apprehensive dental patients.

3. Eskin, L. C. Tolserol for sedation prior to oral surgery; preliminary report. Oral Surg., Oral Med. & Oral Path. 4:1246 Oct. 1951.

Effects of antihistaminic therapy on diphenylhydantoin sodium (Dilantin) gingival hyperplasia

John I. Ingle, D.D.S., M.S.D., Seattle; William L. Howard, D.D.S., Kennewick, Wash., and Harold H. Zwick, D.D.S., Tacoma, Wash.*

To ascertain the effectiveness of an antihistamine, chlorprophenpyridamine maleate, in reducing gingival hyperplasia caused by diphenylhydantoin sodium therapy, a double blind study was made for two months. Half the patients received the antihistamine and half received a placebo. No apparent improvement could be noted in either group, and side effects were about the same in both groups.

Soon after Merritt and Putnam introduced diphenylhydantoin sodium for the treatment of epilepsy in 1938, clinicians began reporting side effects of the therapy; among these, gingival hyperplasia has been reported in 3 to 62 per cent of the cases. In an early study of the oral reaction to diphenylhydantoin sodium therapy, Stern and Eisenbud[1] noted that 52 per cent of a group of 50 patients showed gingival changes in varying degrees of severity, from an increased density and stippling to the extreme cases of enough gingival overgrowth to prevent proper occlusion and function of the teeth. This problem of gingival overgrowth has continued to be one of the undesirable side effects which further complicates the life of the epileptic receiving diphenylhydantoin sodium therapy, and which makes proper oral hygiene extremely difficult. Consequently, a high caries rate and early loss of tooth structure are common. Patients treated with diphenylhydantoin sodium become early candidates for dental prostheses, which can be quite unsatisfactory and, indeed, even dangerous in incompletely controlled epileptics.

Many studies have been made to determine histologic and chemical changes in the gingival tissues during diphenylhydantoin sodium therapy. The earliest histologically recognizable signs of reaction are concentration of collagenous material and thickening of the surface epithelium, often with chronic low grade inflammation characterized by extensive round cell infiltration.[1] The surface epithelium shows proliferating stroma

*Associate professor and executive officer, department of periodontics and endodontics, University of Washington School of Dentistry.

1. Stern, L.; Eisenbud, L., and Klatell, J. Analysis of oral reactions to dilantin sodium. J. D. Res. 22:157 April 1943.

with rete peg formation, acanthosis and scattered pearl formation with no noticeable hyperkeratosis. In the advanced lesion there are increased young and adult connective tissue cells with pronounced leukocytic infiltration, especially of lymphocytes and plasma cells.[2] Histamine-containing mast cells are also present in abundant numbers.[3]

Chemical analysis of gingival tissue from human and animal subjects under diphenylhydantoin sodium therapy has shown variations in vitamin C and histamine content. A decrease in the vitamin C content has been seen, but follow-up studies have not shown a correlation between diphenylhydantoin sodium intake and vitamin C blood levels.[2]

In a recent study[3] of the possible role of histamine in gingival disease, Dewar found that granules of mast cells contain histamine in addition to the previously known heparin content. The study also demonstrated a significant increase in mast cells when the gingiva becomes inflamed.

Francis and Melville[4] studied the effects on guinea pig ileum of gingival extracts from a dog treated with diphenylhydantoin sodium and an untreated control dog. They found that the gingival extract from the normal, untreated dog elicited a diminishing response in the ileum, and in some way seemed to suppress further response of the ileum to the standard histamine dose for a certain recovery period. Conversely, the gingival extract from the diphenylhydantoin sodium-treated dog elicited an increasing response from the ileum and resulted in the gut's response to the standard histamine test dose immediately after its application. These workers concluded that normal gingiva contains surprisingly little extractable histamine, but does contain some unknown smooth muscle depressant of a "histamine-inhibiting" substance. They further suggested that gingival changes induced by diphenylhydantoin sodium might be caused by some type of altered histamine behavior in the gingiva, possibly a sensitivity reaction. The clinical observation that diphenylhydantoin sodium hyperplasia develops predominantly in children and young adults, suggested to Francis and Melville that some "trigger mechanism" concerned with local gingival changes, such as mouth breathing, poor oral hygiene or eruption of teeth, might be an etiologic factor.

CASE REPORTS OF CLINICAL ANTIHISTAMINIC THERAPY

Gaillard[5] reported two clinical attempts to treat diphenylhydantoin sodium gingival hyperplasia with antihistaminic therapy. He cites the case of a 12 year old boy receiving the drug for several years, whose teeth were nearly covered by gingiva. In treating his complaint, (secretory otitis media with concurrent deafness and hypertrophy of the nasopharyngeal membranes) he placed the boy on antihistaminic therapy: 12 mg. of chlorprophenpyridamine maleate in sustained-release capsules (Teldrin) twice a day. After two weeks, Gaillard noted that the nasopharyngeal membranes and ears were improved and that there was less gingival hyperplasia. After two months of antihistamine therapy, the gingiva had reverted nearly to normal, revealing caries which had previously been covered by the gingiva. Antihistaminic therapy was discontinued and in one month the gingiva again became hyperplastic. Chlorprophenpyridamine maleate therapy was reinstituted, with attendant reduction of hyperplasia. The drug was continued with no recurrence of gingival overgrowth.

2. Glickman, I., and Lewitus, M. P. Hyperplasia of the gingivae associated with dilantin (sodium diphenyl hydantoinate) therapy. J.A.D.A. 28:199 Feb. 1941.

3. Dewar, Margaret R. Mast cells in gingival tissue. J. Periodont. 29:67 Jan. 1958.

4. Francis, L. E., and Melville, K. I. Effects of diphenylhydantoin sodium (Dilantin) on histamine changes in gingival tissue. J. Canad. D. A. 24:142 March 1958.

5. Gaillard, R. A. Antihistaminic therapy for gingival hyperplasia due to dilantin. New England J. Med. 256:76 Jan. 10. 1957.

In a second case history, Gaillard reports the treatment of a six year old boy with minimal gingival overgrowth associated with diphenylhydantoin sodium intake, who was placed on 6 mg. of chlorprophenpyridamine maleate twice daily. His gingiva reportedly returned to within normal limits in two weeks.

In view of the foregoing experimental and clinical evidence suggesting the possible role of histamine or histamine-like reactions in diphenylhydantoin sodium hyperplasia, the following clinical research project on a group of 50 patients from the University of Washington Seizure Clinic was initiated.

METHODS OF INVESTIGATION

Clinical Examination • The 50 patients, obtained from the University of Washington Seizure Clinic, were not particularly screened by the medical staff for the study, except to ascertain that they had gingival hyperplasia. Initial dental examination included a brief medical history and cursory oral examination. Those patients not having a significant clinical picture of diphenylhydantoin sodium gingival hyperplasia were studied no further than this initial examination. For the remaining 25 patients with significant hyperplasia, a more detailed examination was undertaken. Of this group, 21 patients completed the study although total records on every patient could not be obtained. Ten of these patients were male and 11 female. The youngest patient was nine years old and the oldest was 42 years old.

Initially, the pseudopocket depth readings were measured with a Williams periodontal probe calibrated in millimeters. Three readings were recorded from the labial gingiva of each of the maxillary and mandibular anterior teeth, the distal papilla, labial margin, and mesial papilla. Other regions showing especially interesting hyperplasia were noted and recorded.

In addition to the periodontal probe examination, maxillary and mandibular impressions were taken with alginate impression material, and study models were poured; also, color photographs showing the anterior view of the teeth in centric occlusion were taken at this time. All photographs were exposed with the same equipment and film at a standard 5½ inch focal length, using a uniform lighting system.

At this initial visit, the patient or guardian was briefed on the purpose of the study and instructed to continue oral hygiene habits in the usual manner. A double blind study was then instituted to test the efficacy of the antihistamines in the reduction of gingival hyperplasia caused by diphenylhydantoin sodium treatment.

Procedure • Half of the patients, taken at random, formed a control group and were given sugar-coated placebo capsules. The remaining half of the patients were given similar capsules which contained 12 mg. chlorprophenpyridamine maleate sustained (Teldrin). The capsules were marked as either A or B and the indentity of their contents was unknown to investigators and patients alike. All the patients were given the same instructions: two capsules per day, one at breakfast and one at bedtime. The patients were also told to contact the investigators if drowsiness occurred. Interestingly enough, no clues to the identity of the placebo group were obtained, for in each group a number of patients reported some drowsiness after ingestion of the capsules. These patients were then supplied with 5 mg. tablets of dextro amphetamine sulfate to offset the soporific effect, mental or drug-induced.

A 30 day supply of medication (60 capsules) was given to each patient at the first visit. After the first 30 days of therapy, the patients were recalled for initial evaluation of the study. Examinations at all subsequent visits were iden-

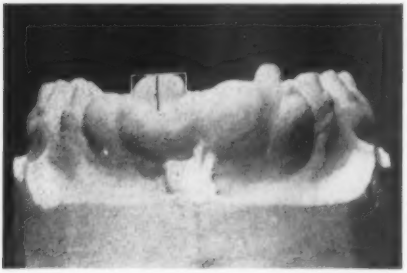

Fig. 1 • Study model, showing the three points of measurement

tical to the initial examination, namely: periodontal probe, impressions and photographs.

Because of limitations of clinical time, not all patients were seen after the 30 day period; therefore, all patients were continued on medication for another 30 days; those who did not appear at the clinic were mailed another 30 day supply with instructions to continue the medication.

After all the patients had been given the 60 day recall examination, the findings were recorded and analyzed. A detailed measurement of the "before" and "after" study models, and evaluation of the clinical photographs and a comparison of the periodontal probe measurements were undertaken. The following findings were noted.

RESULTS

Study Model Evaluation • Using a millimeter scale, measurements were taken on the study models of the distances between the height of tissue and the incisal edge of all six anterior teeth (Fig. 1). If shrinkage of the hyperplastic tissue should occur, it would then become apparent in the increased crown length of the 30 and 60 day models. These measurements were made from three points on each tooth: incisal edge to mesial and distal papilla, and incisal edge to marginal gingiva. By totaling these measurements and then dividing by the number of measurements, an average figure was developed which could be compared with subsequent models for each patient. Over-all average dimensional changes in millimeters were compiled. For convenience, these averages were converted to percentages and charted as to increase or decrease in tissue level for patients on capsule A and capsule B (Table 1). An apparent significant reduction in tissue height was noted in both the A and B groups; 14.68 per cent decrease with capsule A and 14.513 per cent decrease with capsule B. Six patients developed more hyperplasia while under treatment, with a 4.96 per cent increase in the capsule

Table 1 • Per cent of decrease and increase in tissue height

Decrease

Capsule A		Capsule B	
Patient	Per cent	Patient	Per cent
a	8.90	g	8.60
b	0.50	h	15.40
c (mandibular)	8.00	i (mandibular)	4.75
d	7.70	k	48.00
e	46.00	l	2.78
f	17.00	m	7.55
Total	88.10	Total	87.08
Average	14.68	Average	14.513

Increase

Capsule A		Capsule B	
Patient	Per cent	Patient	Per cent
c (maxillary)	8.00	q (maxillary)	7.20
n	2.80	r	2.20
o	0.30		
p	6.75		
Total	17.85	Total	9.40
Average	4.46	Average	4.70

Apparent decrease or increase in tissue height recorded from measurements of initial and recall (30 and 60 days) study models. Measurements on each model were totaled, a mean was established and then converted to either a percentage of decrease or increase for each patient.

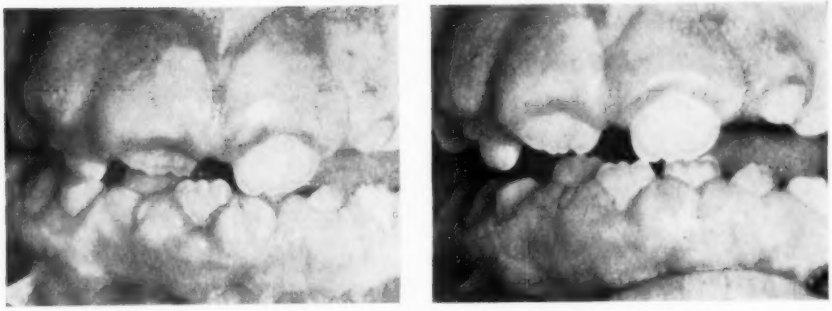

Fig. 2 • Example of intermittent tooth eruption in 60 days.

A group and a 4.7 per cent increase in the capsule B group.

No statistically significant difference between the A and B groups exists in either the increase or decrease of tissue height. As a matter of fact, it was quite apparent that, for the most part, the supposed regression of the hyperplastic tissue only reflected normal tooth eruption, as the majority of patients in the study were in the tooth eruption age (Fig. 2).

Pocket Depth Evaluation • Initial pocket depth measurements at three points on each anterior tooth, mesial and distal papilla and labial gingiva, were totaled and averaged for each patient. These averages were compared with the series of recall measurements for each patient; then the over-all average dimensional changes in pocket depths were compiled and converted to percentages. These percentages were then charted as decrease or increase in pocket depths for patients on capsule A and capsule B (Table 2).

As in the study model measurements, an apparent reduction in pocket depth was found in both the A and B groups: 23.428 per cent decrease with capsule A and 26.7 per cent decrease with capsule B. Eight case histories revealed an apparent increase in pocket depth while the patient was under treatment: 3.5 per cent increase with capsule A and 4.35 per cent increase with capsule B.

Although there appears to be some slight improvement with capsule B over capsule A, there is no statistically signifi-

Table 2 • Per cent of decrease and increase in pocket depth

Decrease

Capsule A		Capsule B	
Patient	Per cent	Patient	Per cent
b	11.60	k	34.30
c	48.50	m	41.00
d	30.00	r	4.80
n	20.80		
o	28.50		
p	1.17		
Total	140.57	Total	80.10
Average	23.428	Average	26.70

Increase or no change

Capsule A		Capsule B	
Patient	Per cent	Patient	Per cent
a	10.50	g	2.50
e	no change	i	no change
s	no change	l	1.30
		q	15.50
		t	2.40
Total	10.50	Total	21.70
Average	3.50	Average	4.34

Apparent decrease or increase in pocket depth recorded from measurements made with a periodontal probe at initial examination and recall examination (30 and 60 days). All depths for each examination were totaled, a mean was established, and then converted to either a percentage of decrease or increase for each patient.

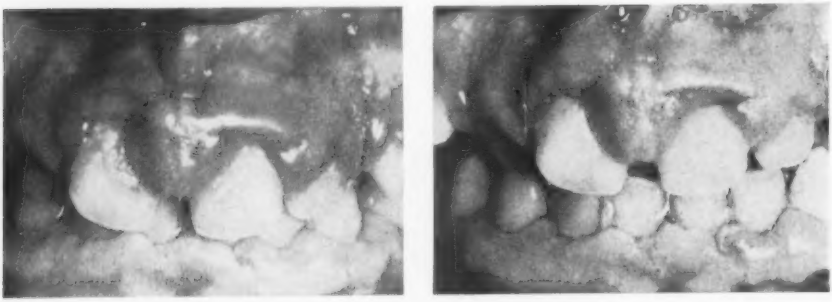

Fig. 3 • A severe case of diphenylhydantoin sodium gingival hyperplasia before and after therapy. Note the slight reduction in inflammation, but no apparent reduction in hyperplasia.

cant difference. Moreover, the apparent improvement in pocket depth is probably caused by active eruption of the teeth.

Photographic Evaluation • Using two 35 mm. projectors, the initial and subsequent series of Kodachrome transparencies for each patient were projected side by side (Fig. 3) on a single screen at a distance of six feet. By carefully comparing the "before" and "after" slides, the investigators classified each patient as to recognizable changes in tissue level, tissue tone, stippling and color (Table 3).

Table 3 • Photographic classification of tissue tone and tissue level

Capsule A		Capsule B	
Patient	Classification	Patient	Classification
a	I	g	I
b	I	h	I
c	III	i	II
d	I	k	I
e	II	l	I
f	I	m	I
n	I	q	I
o	I	r	I
p	II	t	I
s	III		
u	II		
v	II		

Evaluation of "before" and "after" Kodachrome transparencies of patients on capsule A and capsule B. The following code was used in classifying these photographs: I, No improvement or increase in tissue level. II, Improvement in tissue tone, stippling or color, but no decrease in tissue level. III, Decrease in tissue level.

A greater number of the patients given capsule A showed improvement than those given capsule B. However, when these figures were subjected to statistical analysis, x^2 equals 1.97, which indicates that the disparity in the two groups could have occurred by chance alone more than 15 per cent of the time, and that no significant difference therefore existed.

CONCLUSIONS

The overwhelming impression gained from examining these patients and from the evaluation by study models, pocket depth measurements and photographs, was that no significant difference in improvement existed between group A and group B and, furthermore, that no really apparent improvement could be noted in either group. Figuratively speaking, slightly more improvement in the reduction of inflammation was shown by the placebo group (group A) than the experimental group (group B). Moreover, no differences were seen by age or by sex except for the tooth eruption noted in those children in the eruption age group.

These findings are entirely contrary to those of Gaillard,[5] who noted improvement in two epileptic patients taking diphenylhydantoin sodium and antihistamines. In view of the completely negative observations in this study, the im-

provement noted by Gaillard is open to conjecture. Possibly the hyperplasia he reported was not related to diphenylhydantoin sodium, but rather to acute gingivitis or mouth breathing. He was, after all, treating his patients for nasopharyngitis, which is often etiologic for mouth breathing. These acute inflammatory situations might well respond to antihistamines just as nasopharyngeal inflammation frequently is reduced by this therapy. Actually, some reduction in inflammation was noted in this study but in both the patients receiving placebo and those receiving the drug.

The chronic fibrotic hyperplasia seen typically in relation to diphenylhydantoin sodium ingestion does not apparently respond to antihistamine therapy, at least not in 60 days. In evaluating the clinical differences noted in Table 1 and Table 2, the factor of continuous tooth eruption among the younger age group appears to be of some significance, whereas the disparity in results as indicated in Table 3 could have occurred by chance more than 15 per cent of the time.

After a comprehensive analysis of the tables, we feel that no significant difference in tissue reduction of diphenylhydantoin sodium hyperplasia can be directly attributed to 60 days of therapy with the chlorprophenpyridamine maleate (Teldrin).

SUMMARY

In an attempt to ascertain the effectiveness of the antihistamine, chlorprophenpyridamine maleate, in reducing gingival hyperplasia caused by diphenylhydantoin sodium therapy, a two month investigation was carried through as a double blind study. Antihistamine and placebo capsules, identically sugar-coated by the drug service department of the University of Washington School of Pharmacy, were dispensed as capsule A and capsule B. The identification of the capsules was made known to the investigators only after all statistical evidence had been computed, charted and submitted to analysis.

The epileptic patients were carefully screened for hyperplasia caused by diphenylhydantoin sodium therapy, to determine their suitability for this study, and those selected were instructed to maintain their diet, oral hygiene and general health habits as similar to their normal daily pattern as possible. It was very difficult to maintain the patients on this study. If any patient began seizures, the drug was immediately blamed and the patient usually quit the study. As many patients quit on the placebo (milk sugar) as on the antihistamine. Moreover, as many patients in the placebo group complained of drowsiness as in the experimental group.

The patients, on a periodic recall system, were examined clinically, and their pocket depths charted. At the initial and at each subsequent appointment, impressions were taken and study models poured. Scale photographs were also taken at each appointment.

Although in a few instances there appeared to be a change in tissue tone and level, this study does not reveal any conclusive evidence to support the clinical use of chlorprophenpyridamine maleate in the reduction of diphenylhydantoin sodium gingival hyperplasia.

A New Era • The new sources of atomic energy offer so many opportunities for advance that we are now facing the dawn of a new era in all sciences. *James Franck.*

Operation: dental x-ray filtration

Leonard F. Menczer, D.D.S., M.P.H., Hartford, Conn.

To reduce radiation dosage in the normal use of dental x-ray machines, the Hartford (Conn.) Health Department offered to every dentist of the Greater Hartford area the necessary aluminum disks and lead washers, free of charge. Of 285 dentists sent forms, 164 responded.

Instructions are presented on how to insert the disks and washers in the Ritter, General Electric, XRM, Oralix and Weber dental x-ray machines.

Recently, a number of excellent articles[1-3] have appeared in the dental literature discussing the hazards of excessive radiation as well as methods of decreasing radiation dosage in the normal use of the dental x-ray machine. Every dentist should become familiar with this material so that when he is asked questions about the effects of radiation exposure from dental x-ray, he is thoroughly conversant with the subject.

To reduce radiation exposure wherever and whenever possible, the Hartford Health Department undertook what it termed, "Operation: Dental X-ray Filtration," a project in which every dentist of the Greater Hartford area was offered the necessary aluminum disk and lead washer, free of charge, for his x-ray unit.

The purpose of this article is to outline the procedure followed by this health department in making these items available, as well as to explain what is needed for the various types of dental x-ray machines. Such information may be helpful to other health agencies which may decide to provide a similar service. It will also be helpful to the individual dentist in ordering specific parts for his x-ray machine.

Until recently, there was no particular recommendation for the amount of filtration that dental x-ray units should have. All machines have some built-in filtration, such as oil immersion, air filtration (target to film distance) and so forth. For all practical purposes, this "inherent" filtration is equivalent to about 0.5 mm. of aluminum.

On December 1, 1955, the National Bureau of Standards[4] issued Handbook 60, which specified that "the total filter permanently in the useful (x-ray) beam shall be equal to at least 1.5 mm. of aluminum." However, the sanitary codes of many state health departments require filtration equivalent to at least 2 mm. of aluminum.

Aluminum filtration screens out between 40 and 60 per cent of the short,

Public health dentist, City of Hartford Health Department.

1. Caster, W. O. Dental aspects of radiation. North West Den. 36:209 July 1957.

2. Practical application of newer radiation knowledge to everyday practice. J. Dist. Columbia D. Soc. 12:3 May 1957.

3. Sweet, A. P. S. How to decrease x-radiation dosage. D. Radiog. & Photog. 30:52 No. 3, 1957.

4. National Bureau of Standards. Handbook 60. X-ray radiation. Washington, D. C., Government Printing Office, 1955.

soft rays that are least effective in roentgenography and most harmful (in excessive doses) to the soft tissues of the body. Two axioms for a clearer understanding of the desirability of such filtration are: (1) Radiation interacts with matter and the interaction process is called radiation absorption; (2) if the tissue is exposed to roentgen-ray radiation, the damage is proportional to the quantity of radiation.

Since effects of radiation exposure tend to be cumulative, it is desirable to reduce exposure as much as possible; this may be accomplished in three ways: (1) Through the use of aluminum filtration; (2) by reducing the area of radiation exposure, through the use of a lead washer or lead diaphragm; (3) by reducing the exposure time, through the use of fast or ultrafast film.

All dental x-ray units limit the escape of roentgen rays through a single opening, and the diameter of exposure may be limited by a lead washer or lead cone. Since the rays diverge, the longer the target to film distance, the larger the area of exposure. Therefore, the smaller the opening in the lead washer, the more limited the area of soft tissue exposure.

In early September, 1957, the Bureau of Dental Health of the Hartford Health Department addressed a letter to all dentists in the area, which read in part:

Dear Doctor:

The subject of radiation hazards is currently being discussed in many circles, and though the dental x-ray unit is completely safe in its normal use, it is still desirable to eliminate as much stray radiation as possible. It is recommended that all x-ray units have the equivalent of 2 mm. of aluminum filtration in order to eliminate the stray, soft rays emanating from the tube target.

The Hartford Health Department would like to provide such a screen for your x-ray unit, if you do not already have one; however, it would be necessary for us to know the type and model of machine you are presently using, since the diameter and thickness of the filter varies with the machine. It is recommended, therefore, that you complete the blank attached hereto and return it in the enclosed self-addressed envelope.

In the interest of greater safety to yourself, as well as your patients, this aluminum filter is recommended.

A form was attached with space for the doctor's name, address and make and model number of his x-ray unit or units. A total of 285 letters was mailed, and replies were received from 164 dentists within three weeks, which demonstrates the tremendous interest of the dental profession in radiation safety. The number of x-ray units per dentist varied from one to three; therefore, the 164 replies represented 176 x-ray units.

One problem resulted from the replies. Not only were the standard x-ray machines mentioned, but also such names as Waite-Bartlett, Sanitas, Grenz-Ray, Mattern, Fischer, and William Meyers. Only 14 of these unusual x-ray units were reported, and attempts were not made to obtain filters for them.

The total cost of this undertaking (not including postage and clerical work) came to $106, or approximately $0.60 per x-ray unit. Almost every company made the disks and washers available to us at the wholesale price, and the finest cooperation was obtained from each of them. The range in cost per unit was from $0.20 to $3.19. The 176 x-ray machines were made up of the following: Ritter, 89; Weber, 45; XRM, 13; General Electric, 10; Oralix, 5; miscellaneous, 14.

At the time of mailing of the necessary items to the dentists, instructions on how to insert the disks or washer, or both, were included. These instructions are repeated here for the various units:

RITTER DENTAL X-RAY MACHINES[5]

Models B and D have an inherent filtration equivalent to from 0.25 to 0.5

5. Ritter Company, Incorporated, 400 West Ave., Rochester 3, N. Y. Personal communication, Sept. 24, 1957.

mm. of aluminum. These models are the most common Ritter models presently in use. (The model A machine has an exposed high-tension wire.)

Aluminum Disk • Thickness: 1.0 mm. Diameter: 2½ inches. Ordered as: part no. P-13547. Retail price: $0.25.

Instructions for Inserting Aluminum Disk into Models B and D • 1. Unscrew pointer cone from unit. 2. Insert aluminum disk into pointer cone. 3. Replace pointer cone.

This disk, when added to the inherent filtration, gives a total of 1.25 to 1.5 mm. of aluminum, or its equivalent. It may be desirable to use two disks.

These models have a lead cone leading out from the tube target, which limits the spread of the rays. The beam diameter at the 8 inch target to film distance is 4½ inches. Recently, the company has provided a lead diaphragm which gives an effective beam diameter of three inches.

The model E unit needs no discussion, as it comes equipped with 2 mm. of aluminum filtration, (inherent plus addition) along with a lead washer which limits the effective beam diameter to 3 inches.

GENERAL ELECTRIC X-RAY MACHINES[6]

Model E-CDX • The model E-CDX unit is the older of the General Electric machines in use. It has an inherent filtration of 1.4 mm. of aluminum, and a lead washer or diaphragm with a hole 1¼ inches in size. The company does not make a washer with a smaller opening for this unit, though some thought has been given to it. The aluminum disk is not made specifically for this model, but for their newer models. The diameter of the cone where a filter could be inserted is $3\frac{3}{16}$ inches; however, the filter made for the newer models is $1\frac{49}{64}$ inches in diameter. The company recommends that this smaller aluminum disk be taped to the lead washer in the cone.

Aluminum Disk • Thickness: 0.5 mm. Diameter: $1\frac{49}{64}$ inches. Ordered as: part no. 1005341 Pl. Retail price: $0.30.

Instructions for Inserting Aluminum Filter • 1. Unscrew pointer cone. 2. At base of cone, there is a lead washer with a hole approximately 1¼ inches in diameter. Place aluminum disk over hole and tape disk to the lead washer with cellophane tape. 3. Screw pointer cone back on x-ray unit.

Since the inherent filtration of this unit is 1.4 mm. of aluminum and the added disk is 0.5 mm., a total of 1.9 mm. of aluminum (inherent and added) is achieved.

Victor CDX • This is an early model made by General Electric. Its inherent filtration varies from 0.6 to 0.9 mm. aluminum equivalent. The regular General Electric filter can be used on this machine.

Models 70 and 90 • Produced in 1956, models 70 and 90 have an inherent filtration of 1.5 mm. of aluminum and a built-in lead washer or diaphragm with a ¾ inch hole. In addition, model 90 is shipped with two additional 0.5 mm. aluminum filters, along with a clip ring to hold them in. These additional disks build the filtration up to 2.0 or 2.5 mm. of aluminum.

XRM DENTAL X-RAY MACHINES[7]

The XRM unit is produced by the X-Ray Manufacturing Corporation of America. All their dental x-ray models are iden-

6. General Electric Company, X ray Department, 4855 Electric Ave., Milwaukee 1, Wisc. Personal communication, Sept. 24, 1957.

7. X-Ray Manufacturing Corporation of America, 1790 Plaza Ave., New Hyde Park, N. Y. Personal communication, Aug. 29, Sept. 19, 25, 1957.

tical insofar as the tube head orifice is concerned; therefore, the aluminum disk or washer, or both, will fit any unit. The models sold prior to 1955 had an inherent filtration of 0.75 of aluminum.

Aluminum Disk • Thickness: 1.25 mm. Diameter: 2⅝ inches: Ordered as: aluminum filter (no specific part number). Retail price: $1.

Since the inherent filtration of these machines is equivalent to 0.75 mm. of aluminum, the addition of the one disk (1.25 mm. of aluminum) makes up the desired filtration of 2 mm.

Lead Washer or Diaphragm • Diameter: 2⅝ inches. Size of hole: ¾ inch. Ordered as: lead diaphragm (no specific part number). Retail price: $1.

No snap ring is necessary to hold these parts in place.

Instructions for Inserting Aluminum Filter and Lead Washer • 1. Unscrew pointer cone. 2. Insert aluminum disk into head of unit. 3. Insert lead washer. 4. Replace pointer cone.

The company states that units purchased within the last ten years have had the lead washer placed into the machines. However, it was found that of the 13 XRM units in this community, only three had the washer. All new machines shipped from the factory since 1956 are provided with 2.0 mm. of aluminum, (or equivalent) as well as the lead washer.

PHILIPS ORALIX X-RAY MACHINE[8]

This Philips machine is quite different from the machines previously mentioned in that it operates at a fixed potential of 45 kv. with a tube current of 5 milliamperes. It has an inherent filtration equivalent to 1.0 mm. of aluminum. The Oralix has a "diaphragm" inserted in a slot at the side of the "director cone" which allows selection of x-ray beam diameter. This is a rectangular piece of nickel steel approximately 2½ inches by ¾ inch with two holes in it. In order to build up the filtration, the company has available an identical diaphragm with these holes plugged with 1.0 mm. of aluminum.

Aluminum Disk • Thickness: 1.0 mm. Ordered as: filter diaphragm. Retail price: $4.90.

Instructions for Inserting Aluminum Filter • 1. Remove diaphragm from cone. 2. Insert filter diaphragm.

WEBER DENTAL X-RAY MACHINES[9]

Models 5, 6, 7, and 7-A • The most common models are models 5 and 6, which have an inherent filtration of 1.0 mm. of aluminum. All Weber machines have similar tube head orifices, so the same filter and lead washer are applicable to all models.

Aluminum Disk • Thickness: 0.5 mm. Diameter: 1⅜ inches. Ordered as: part no. XR8077. Retail price: $0.20.

Lead Washer or Diaphragm • Diameter: 1⅜ inches. Size of hole: ¾ inch. Ordered as: part no XR8137. Retail price: $0.65.

A snap ring is necessary to hold the disk and washer in place and is ordered as part no. XR8078 and retails for $0.50.

Instructions for Inserting Aluminum Disk and Lead Washer • 1. Unscrew pointer cone. 2. Insert two aluminum disks into tube head aperture. 3. Insert lead washer. 4. Insert clip ring. 5. Replace pointer cone.

Since the inherent filtration of models 5 and 6 is 1.0 mm., it is necessary to

8. North American Philips Company, 525 W. 52nd St., New York. Personal communication, Sept. 18, 1957.

9. The Weber Dental Manufacturing Company, 2206 13th St., N.E., Canton 5, Ohio. Personal communication, Aug. 28, 1957.

add two disks (0.5 mm. each) to make up the minimum recommendations of 2.0 mm. of filtration. The lead washer limits the effective beam diameter, at an 8 inch target to film distance, to 3½ inches; without the washer, an area of 5½ inches is covered.

Models 6-R, 11-R and 12 • These are supplied with an inherent filtration of 1.5 mm. of aluminum. In addition, each machine comes with two 0.5 mm. aluminum disks to build the filtration to 2.0 mm. or to 2.5 mm. of aluminum.

GENERAL INSTRUCTIONS

A few additional paragraphs were included in each letter in order to insure good roentgenography:

Your x-ray unit has an inherent filtration of (so many) mm. of aluminum. The enclosed disk is (so many) mm. thick. Together, this gives you 2 mm. of aluminum filtration. The purpose of the aluminum disk is to filter out the soft, short rays that are least effective in roentgenography and most harmful to the soft tissues of the body.

The purpose of the lead washer is to reduce the area of exposure of the patient's face, so that where previously an area of 5½ inches was exposed, now only 3½ inches will be exposed.

The insertion of the aluminum disk and lead washer into your x-ray machine will require certain action on your part: 1. Since a smaller area of the patient's face is radiated, it will be necessary for you to position the pointer cone more accurately. 2. Since the aluminum disk cuts the quality of the x-ray picture at lower kilovoltage, it will be necessary to increase slightly the kilovoltage and exposure time. In all probability, your machine is set for 65 kv. and 10 milliamperes. There is a dial on your x-ray unit to increase the kilovoltage. It is desirable to use the highest kilovolt setting commensurate with your unit (for example, 70 kv., 10 milliamperes). In addition, by increasing exposure time perhaps by ¼ second, you will get the same quality picture that you are presently obtaining.

For greater safety to your patients, as well as yourself, it is recommended that the fastest possible film be used.

56 Coventry Street

Changing Factors in Disease • Our bodies are complicated built-in chemical laboratories, evolved ages ago under primitive conditions. Already we are discovering disquieting facts. Longer life span is being purchased at the cost of increasing numbers of the aged whose survival creates new problems. . . . Not merely is mastery of existing diseases incomplete; germs and viruses are learning to thrive on drugs which, a year or two ago, were fatal to them. The history of past epidemics is a tragic story. . . . It may be thought that, as we now understand carriage of disease by lice, fleas, flies, rats, mosquitoes and contaminated water, the history of past epidemics has but slight significance. Such thinking, however, is of the ivory castle brand. Life is never static. We are losing resistance to certain germs, and germs are evolving in their race for survival. Owing to their extraordinary rate of reproduction, the possibilities of new varieties of microorganisms by mutation are very real. The delicate balance between immunity and disease may be tipped against us. The rapidity of international travel fosters air-borne and contact dissemination of disease on a world scale and is creating a situation which may be difficult to control. We would indeed be well advised to continue to read and disseminate the history of epidemics as a spur to continued vigilance in the field of public health.—*J. Bostock. Medicine's Need for History, The Medical Journal of Australia, October 25, 1958.*

Dynamics of occlusion

Irving M. Sheppard, D.M.D.; Harold G. Jacobson,† M.D.; Costantino Zaino,‡ M.D., and Maxwell H. Poppel,§ M.D., New York*

To ascertain the relative importance of condylar guidance and the neuromuscular system to occlusion, roentgenographic studies of adults were made.

Condylar movement from rest position to an incisal opening of 35 mm. almost invariably was translatory, with a small component of rotation. The condyles do not exclusively rotate in normal opening and closing movements. The absence of pure condylar rotation about an axis precludes the use of such an axis as the sole, precise guide to occlusion. Muscles are the dominant factor in the establishment and maintenance of occlusion.

Agreement on the importance of occlusion in dentistry seems equalled by disagreement on the periodontal, orthodontic and prosthodontic approaches to occlusion. This disagreement is accentuated by the conflicting theories within these approaches. This study was undertaken to ascertain the relative importance of condylar guidance and the neuromuscular system to occlusion.

METHOD

Studies of the Temporomandibular Joint • Temporomandibular joint roentgenograms were taken of 450 adults, totaling 3,000 exposures. The Updegrave technic[1] was used for recording both joints with the mandible in the closed and rest positions, and open 35 mm. incisally. No instructions to bite or close were given for the last position.

Studies of Deglutition • Serial roentgenography with the synchronized Fairchild camera was employed to study deglutition in 12 adults. Six were normal swallowers and six were atypical swallowers, as evidenced by severe open bites and forward tongue movement between the upper and lower anterior teeth. Each patient was fed thick barium from a spoon, and then liquid barium from a glass and, starting with the jaws in the closed position, exposures were made every half second.

Studies of Mastication and Deglutition • Cinefluorography was used with 12 adults, who were fed water, barium with a spoon and a glass, and then given celery. The Philips image intensifier was employed in

*Associate attending oral surgeon, Montefiore Hospital.

†Chief, division of diagnostic radiology, Montefiore Hospital.

‡Assistant clinical professor of radiology, College of Medicine, New York University.

§Professor and chairman, department of radiology, College of Medicine, New York University, and consultant, Montefiore Hospital.

1. Updegrave, W. J.: Improved roentgenographic technic for the temporomandibular articulation, J.A.D.A. 40:391, April 1950.

Fig. 1 • Above: Position of jaws as two thirds of a teaspoonful of thick barium enter oral cavity. Center: Jaws approaching bracing position during posterior propulsion of bolus. Below: Jaws in bracing position after propulsion of bolus into esophagus; this action is extremely rapid

conjunction with 16 mm. motion pictures taken at 12 to 48 frames per second.

Studies of Occlusion • Study models and 18 film roentgenographic surveys of a group of 20 apparently healthy patients between the ages of 40 and 70 were separated into two classifications—one with gross periodontal involvement and the other with no periodontal involvement. The models were ground from the third or second molars forward, to obtain buccolingual cross sections of the occlusal relationships. These were photographed as the grinding proceeded anteriorly. The procedure was repeated in a somewhat sagittal direction, to obtain a buccal view from molar to cuspid region.

OBSERVATIONS

Condylar Movement • Condylar movement from rest position to an incisal opening of 35 mm. was almost invariably translatory, with a small component of rotation. In one patient with generalized arthritis, rotation alone was found in only one condyle which was grossly arthritic in appearance. Few patients showed movement which was essentially rotatory, but these did have some translatory movement. In this group one condyle was malposed because of a malunited fracture. The others showed clinical evidence of muscle spasm.

Movement of the condyle from rest position to closure, although quantitatively small, was frequently visible as translatory.

Deglutition • In the deglutition studies it was observed that in the closed position of the jaws, the tongue appeared in contact with the palate. When the mouth was opened, the tongue dropped with the mandible. The forepart of the tongue dropped with the approach of the spoon to make room for the bolus (Fig. 1, above). As the anterior part of the tongue

was applied to the palate to obliterate the bolus-filled space, (Fig. 1, center) a V-shaped groove appeared in the posterior part of the tongue. As the bolus entered this region, the mandibular teeth appeared to brace themselves against the maxillary teeth while the bolus was propelled posteriorly and downward by the tongue (Fig. 1, below). This meeting of the jaws occurred with each swallow in the apparently normal swallower, functioning with a small bolus. This jaw contact did not appear in the atypical swallowers until the barium had disappeared. Two or more swallows were required. Thus the normal swallower braced the mandible during the propulsion of each small bolus, and the atypical one did so less frequently.

The approach of a glass appeared to cause a greater dropping of the tongue in both types of swallowers, sometimes before the container touched the lips. The entire tongue appeared to drop, and propulsion occurred without a bracing movement.

Mastication and Deglutition • The chewing of celery coated with barium showed three types of boluses: a parking bolus, a masticatory bolus and a swallowing bolus. When the food quantity was too large to chew, the excess was parked in the buccal space until the masticatory bolus attained what appeared to be the size, smoothness and moisture requirements of a swallowing bolus. After the food was swallowed, the parking bolus was moved to the food table, and the masticatory and swallowing cycles were repeated.

Occlusion • The study models, having been ground in the position of maximum contact, showed all periodontally involved regions to have nonaxial stress (Fig. 2 and 3). Where severe medial stress was present on the buccal surfaces of the lower buccal cusps, lingual tilting of the lower molars was observed (Fig. 2

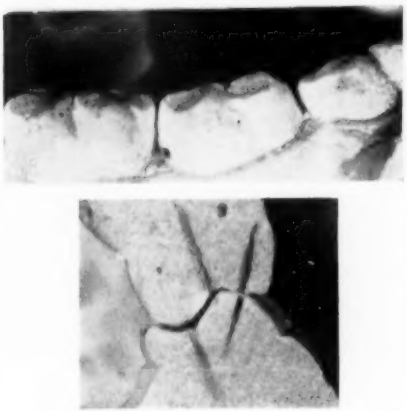

Fig. 2 • Above: Teeth in bracing position with buccal facets indicating nonaxial stress; teeth periodontally involved. Below: Teeth in bracing position with nonaxial stress.

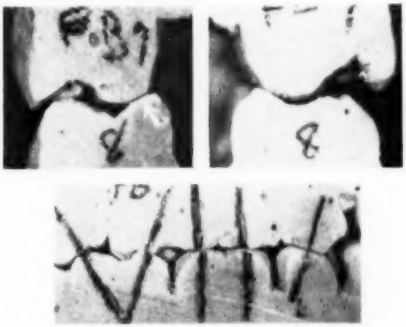

Fig. 3 • Above: Teeth in bracing position with nonaxial stress; 53 year old patient has periodontal involvement. Below: Position of teeth in sagittal plane of patient above, with nonaxial stress. Upper first bicuspid, upper second and third molars and lower second bicuspid, lower second and third molars have severe periodontal involvement.

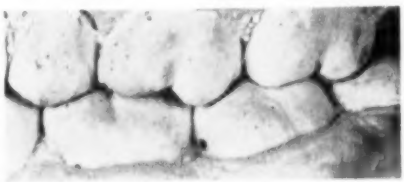

Fig. 4 • Teeth in bracing position, showing intercuspation.

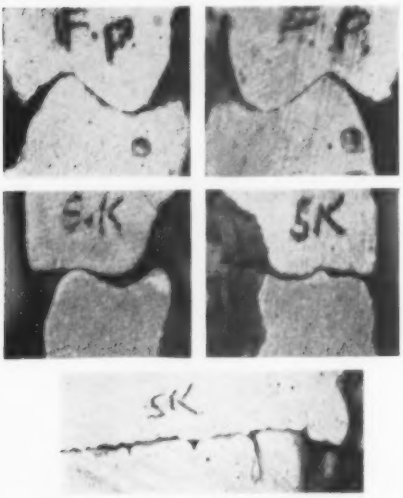

Fig. 5 • Above: Teeth in bracing position with axial stress: 48 year old patient with no periodontal involvement. Center: Teeth in bracing position with axial stress: 51 year old patient, with no periodontal involvement. Below: Sagittal section of models of teeth of patient directly above with axial stress in this plane.

and 4). Of the nonperiodontally involved patients, all but two showed little or no axial stress applied to the teeth (Fig. 5). The two which did show gross stress without periodontal involvement had long histories of bruxism, with breakage of tooth structure and restorations.

Intercuspation (Fig. 4) in both planes examined, prevailed in patients with periodontal involvement. In the nonperiodontally involved patients, intercuspation was absent in the buccolingual plane (Fig. 5, above and center) and was found in only a few regions in the mesiodistal plane (Fig. 5, below).

DISCUSSION

Condylar rotation in function has long been accepted in dentistry, as evidenced by the rotatory condylar movement on articulators upon opening vertically. Exponents of the hinge axis theory[2,3] have described pure vertical motion as rotation around a horizontal axis located within the condyles, which determines the arc of closure on which the teeth meet. Inasmuch as this rotation dictates cuspal relation, its importance to this theory is great. However, our findings show translatory movement in almost every instance. In 1938, Riesner[4] showed similar findings. Moyers[5] found no hinge axis rotation in function in 60 patients studied with serial roentgenography. Posselt[6] found no axis of rotation within the condyles. Rotation of the condyles on the opening and closing movement in nonpathological joints can be produced by weighting the mandible, as with a clutch and face-bow, in the hinge axis technic;[5,7] by coaching;[3] with guidance of the dentist's thumb and forefinger, or a combination of these methods. Recordings of the hinge axis, taken with clutches interposed between the jaws, start from positions where translatory movement may have already taken place (Fig. 6, below left). None of these means of obtaining rotation is present during normal function and it seems questionable, therefore, to use these methods to achieve a condylar motion. The use of such an axis of rotation to dictate occlusal relationships is thus also questionable.

Further question of the dictatorship of the condyles arises in connection with condylectomies. If precise axes of rotation within the condyles are to govern intimate details of occlusion, the surgical removal of the condyles should cause complete loss of guidance. However, ex-

2. McCollum, B. B. Oral diagnosis. J.A.D.A. 30:1218 Aug. 1943.

3. Granger, E. R. Centric relation. J. Pros. Den. 2:160 March 1952.

4. Riesner, S. E. Temporomandibular reaction to occlusal anomalies. J.A.D.A. & D. Cosmos 25:1938 Dec. 1938.

5. Moyers, R. E. Proceedings, Soc. Oral Phys. and Occl. Nov. 13, 1955.

6. Posselt, U. Studies in the mobility of the human mandible. Acta Odont. Scandinavica 10:19 Suppl. 10, 1952.

7. Shpuntoff, H., and Shpuntoff, W. A study of physiologic rest position and centric position by electromyography. J. Pros. Den. 6:621 Sept. 1956.

cellent function occurs after such surgery, as shown by Henny[8] and Swanson.[9] Moyers[5] registered centric position electromyographically on 17 patients who had bilateral condylectomies, and has also shown[10] that 76 per cent of 1,100 patients showed muscle imbalance when the jaws were closed with the condyles in the most retruded position. The contention that centric occlusion occurs with the condyles in the most retruded position in their fossae from which unstrained movements can take place, or that rotation occurs around a pinpointed axis, does not seem likely. Emphasis on retrusion usually means that the possibility is not considered of retrusion being in a superior direction with a potential for the development of symptoms.[11] The variations in condyle-fossa relation-

8. Henny, F. A., and Baldridge, O. L. Condylectomy for the persistently painful temporomandibular joint. J. Oral Surg. 15:24 Jan. 1957.

9. Swanson, A. E. Mandibular condylectomy for temporomandibular joint ankylosis: a postoperative evaluation. Preprinted abstracts, I.A.D.R. 34th general meeting, March 1956, p. 25.

10. Moyers, R. E. Some physiologic considerations of centric and other jaw relations. J. Pros. Den. 6:183 March 1956.

11. Sheppard, I. M. Relation of occlusion and temporomandibular joint morphology to temporomandibular joint symptoms. J. Pros. Den. 6:339 May 1956.

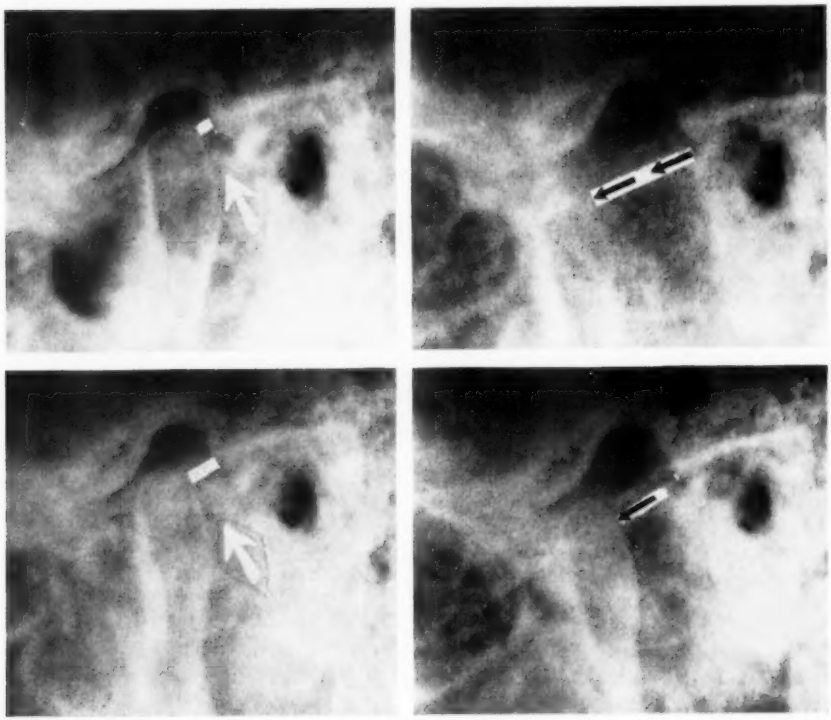

Fig. 6 • Above left: Jaws closed in centric position with condyle in normal position. Above right: Jaws opened incisally 35 mm. with condyle below eminentia. Normal translatory movement has occurred. Below left: Jaws closed with upper and lower clutches in place. Condyle has already undergone translatory motion. Below right: Jaws opened wide could not accommodate 35 mm. block with clutches in place. Condyle has not reached eminentia, indicating less translatory motion with clutches

ships[12,13] possible with good function, are not taken into consideration.

The three types of structures that are of importance in dentistry are tooth, bone and muscle. From a viewpoint of ability to repair and adjust to trying situations, it is obvious that teeth lose much of this capacity after childhood. The capacity of bone remains for a longer time, but periodontal disease and the difficult healing of fractured bones indicate a lessening ability to repair and adjust with the passage of time. Muscle, however, retains much of its capacity throughout life, long after bones and joints may have given way to pathologic changes. After the failure of the teeth and the alveolar bone to survive, the muscles still function. During childhood the musculature is responsible, in great measure, for the growth and development of bone.[14] Atrophy of a muscle in a child, as occurs with poliomyelitis, retards the growth of the long bones. Young patients with pseudohypertrophic muscular dystrophy have grossly malformed dental arches.[15,16] Removal of the masseter muscle in the rat results in an open bite, cross bite relationship and atrophy of tooth-bearing bone on the cut side.[17] It seems apparent, therefore, that muscle (the neuromuscular system) is dominant over the teeth and bone, including the condyle.

The muscular activities which are primarily concerned with occlusion are mastication, deglutition, bruxism and clenching. Mastication, as related to occlusion, may not be as important as was thought because the time spent each day in this activity is not appreciable. Incision has virtually been replaced by the knife and fork; small segments of cut foods requiring a minimum of muscular action are considered socially proper. Foods, in general, are prized for their softness. Pressure cooking and liquefying machines remove much, if not all, semblance of the original texture, and juices have displaced many foods previously eaten as solids. Considerable nutrition is obtained from liquid foods such as milk and its various sweetened modifications. Beyron[18] states that masticatory movements occur to a very limited extent. Anderson and Picton[19] show that teeth do not come into contact for almost half of the chewing strokes, and then, in centric position. Brudevold[20] shows that the opposing teeth do not make contact with appreciable force in chewing, and Jankelson[21] has shown that the teeth rarely contact each other in mastication. Hence mastication, from a viewpoint of time and muscular force involved, may in many instances have little bearing on the occlusion.

Bruxism and clenching, although not found in all patients, are muscular activities occupying varying amounts of time, with considerable force applied to the teeth and jaws. Where the continuous eruption of the teeth has been retarded, or excessive wear or periodontal destruction has taken place as a result of bruxism or clenching,[22] injury can result from muscle domination. Other muscles of the body, including the heart, have been known to acquire deleterious habits.[23]

12. Ricketts, R. M. Variations of the temporomandibular joint as revealed by cephalometric laminagraphy. Am. J. Orthodont. 36:877 Dec. 1950.

13. Alexander, P. C. Movements of the condyle from rest position to initial contact and full occlusion. J.A.D.A. 45:284 Sept. 1952.

14. Brodie, A. G. Anatomy and physiology of head and neck musculature. Am. J. Orthodont. 36:831 Nov. 1950.

15. Futterman, M. J. Dental anomalies associated with pseudohypertrophic muscular dystrophy. D. Outlook 27:73 Feb. 1940.

16. White, R. A., and Sackler, A. M. Effect of progressive muscular dystrophy on occlusion. J.A.D.A. 49:449 Oct. 1954.

17. Horowitz, S. L., and Shapiro, H. H. Alveolar bone changes following alteration of masticatory function in the rat. New York D. J. 22:212 May 1956.

18. Beyron, H. L. Occlusal changes in the adult dentition. J.A.D.A. 48:674 June 1954.

19. Anderson, D. J., and Picton, D. C. A. Tooth contact during chewing. J. D. Res. 36:21 Feb. 1957.

20. Brudevold, F. A basic study of the chewing forces of a denture wearer. J.A.D.A. 43:45 July 1951.

21. Jankelson, B.; Hoffman, G. M., and Hendron, J. A. The physiology of the stomatognathic system. J.A.D.A. 46:375 April 1953.

22. Glickman, I. Clinical periodontology. Philadelphia, W. B. Saunders Co., 1953, p. 398.

23. Blame bad heart habits. Science News Letter 70:310 Nov. 17, 1956.

Two of the patients with severe bruxism showed no periodontal abnormality after more than 40 years, so there is doubt that this is an exclusively pathological habit. It is, however, generally classified as nonmasticatory and capable of producing injury to nearby structures.[24]

Deglutition, the remaining muscular activity involving occlusion, is important because it takes place every 60 to 75 seconds, more often when eating, less often during sleep.[25] Normally, the bracing force to hold the mandible is considerable in order to neutralize the propelling force of the tongue, which appears almost convulsive in power. An analogous example might be the free-floating fireboat spraying large quantities of water from one side of the boat, compelled to send equal quantities on the side away from the fire to avoid capsizing. For maximum bracing, a position of maximum occlusal contacts is sought by the musculature[10] and appears to be what is commonly accepted as centric occlusion.

The tolerance of the musculature for changes of occlusion in a vertical direction has been noted in the experience of most practitioners, and the observation is substantiated by the ability of muscles to elongate.[10] There is less latitude of tolerance on the part of the musculature for changes of the bracing position in lateral or anteroposterior directions. Within these ranges the mandible will be carried to the bracing position of maximum contacts.[10]

Many positions of centric occlusion are thus possible, and no doubt occur during the lifetime of many humans. It cannot be assumed that centric occlusion is immutable. It can be assumed that a bracing position of maximum contacts will be sought and repeated by the musculature, wherever such a position may be. It may be beyond the ability of the condyle and musculature to adjust to sudden gross changes in the bracing position, particularly if the demand is not equal on both sides.[11]

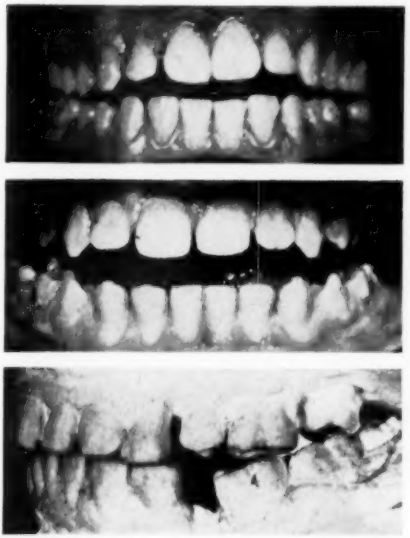

Fig. 7 • Above: Teeth of atypical swallower in closed position. Nonocclusion of anterior and most posterior teeth. Rotation and spacing present. Center: Teeth of muscular dystrophy patient in closed position, showing nonocclusion of most teeth. Spacing of teeth and enlargement of lower jaw present. Below: Atypical swallower with nonocclusion of anterior teeth and some posterior teeth.

Inasmuch as the muscular movements involved in swallowing are so intimately related to occlusion, it is understandable that variations from the normal pattern described could conceivably cause changes in the occlusal relationships.[26] Such variations occur with tongue motion exerted in directions other than those ordinarily necessary for the propulsion of the bolus (Fig. 7, above and center). If in a forward direction, the following[27] may result: nonocclusion or open bite, crowding and rotation of anterior teeth,

24. Jankelson, B. Physiology of human dental occlusion. J.A.D.A. 50:664 June 1955.

25. Armstrong, H. G., and Heim, J. W. Effect of flight on middle ear. J.A.M.A. 109:417 Aug. 7, 1937.

26. Salzmann, J. A. Prevention and interception of malocclusion. Am. J. Orthodont. 34:732 Sept. 1948.

27. Sheppard, I. M. Tongue dynamics. D. Digest 59:117 March 1953.

edge-to-edge and crossbite relationships, interproximal spacing and migration. If nonbolus-propelling forces are exerted in a lateral direction, similar tooth and occlusal relationships are found in the posterior region. Combinations of these conditions occur when the nonbolus-propelling forces are exerted in more than one direction at the same time (Fig. 7, below).

The absence of adequate bone support intensifies the migration of teeth subjected to these pressures. During the bracing of the mandible, these patients have part of the tongue interposed between the nonoccluding teeth, or exert forces which are not neutralized by the external musculature. The amount of tongue motion, visible cinefluorographically, would seem to nullify the equilibration, or orthodontic correction of such occlusions unless the muscles are retrained, or the teeth immobilized by appliances. This problem has been recognized in orthodontics.[28]

Studies by Cauhépé[29] and Tulley[30] show that the normal swallower exerts more pressure with the masseter and less with the circumoral muscles in bracing than does the atypical swallower. Apparently, the atypical swallower closes his jaws with much less force than the typical swallower, but has to exert more force with the circumoral muscles to neutralize the abnormal forward tongue pressure.

The surprising amount of tongue motion visible cinefluorographically, the direction of movement in the atypical swallower, and the measurements of tongue force by Kydd[31] indicate the possibility that the "anterior component of force" may be tongue action, particularly in atypical swallowers.

The de-emphasis of the condyle points up the neuromuscular system as most pertinent to occlusion, by virtue of the bracing position in swallowing. The latter, a survival mechanism, with its frequent and somewhat regular muscular contractions, appears to be the heart beat of the stomatognathic system.

Analysis of sectioned models shows that the meeting of opposing jaws in swallowing indicates an association between nonaxial stress on teeth (most often of a medial or lateral direction) and periodontal disease.

CONCLUSIONS

1. The condyles do not exclusively rotate in normal opening and closing movements.
2. The absence of pure condylar rotation about an axis in normal function precludes the use of such an axis as the sole, precise guide to occlusion.
3. Muscles are the dominant factor in the establishment and maintenance of occlusion.
4. The bracing position of the mandible in swallowing is of major importance to occlusion.
5. Nonaxial stresses in the bracing position appear associated with periodontal pathologic changes.
6. The anterior component of force may be tongue action.

28. Anderson, G. M. Practical orthodontics. St. Louis, C. V. Mosby Co., 1955, p. 582.

29. Cauhépé, J.; Fieux, J., and Bouvet, J. M. Déglutition et troubles d'occlusion. Rev. stomat. 54:905 Oct. 1953.

30. Tulley, W. J. Methods of recording patterns of behavior of orofacial muscles using the electromyograph. D. Record 73:741 Dec. 1953.

31. Kydd, W. L. Quantitative analysis of the forces of the tongue. J. D. Res. 35:171 April 1956.

Knowing When To Act • Next to knowing when to seize an opportunity, the most important thing in life is to know when to forego an advantage. *Benjamin Disraeli.*

An analysis of root canal instruments

Samuel Luks, D.D.S., New York

The barbed broach, root canal file, reamer, rat-tail file and rasp are described in fine detail, and their use and care indicated. An understanding of the working surfaces of these root canal instruments permits the operator to select the correct instrument and use it in the proper sequence.

Endodontic procedures begin in the gaining of access to the root canals of teeth by means of power-driven burs or diamond stones. Once access has been accomplished, the operator must revert to hand manipulated broaches, files, reamers, rat-tail files and rasps to enlarge and prepare root canals for whatever therapeutic and diagnostic procedures are to follow. Since the over-all objective in endodontic treatment is the complete removal of all tissue, vital or necrotic, this hand operation is basic and the starting point for all operators, regardless of shifting favoritism in drugs, culturing technics and final filling.

This hand operation requires a high degree of tactile sense. When the instrument has reached the root canal, it is impossible for the operator to see what is taking place. Interpretation of the action of the instrument within the root canal is solely a matter of tactile sense experienced through the fingertips which engage the handle of the instrument. A good part of the skill in endodontics lies in the ability of the operator to interpret the action of the instrument as he manipulates it within the root canal.

MECHANISM OF TACTILE SENSE

The high degree of digital skill needed can be acquired after a reasonable amount of practice if the mechanism by which this ability is developed is understood. The volar side of the terminal phalanges of the fingers has on its surface minute spirals of cuticle in curved designs of ridges and depressions called capillary ridges which are commonly referred to as the fingerprints. It is in these regions of the soft pulp matter that the corpuscles of Golgi-Mazzoni and Pacini are located. The nerves which supply tactile sense terminate here. The nerve endings in the subcutaneous tissue of the pulp of the fingers are associated with the median nerve. These fingertip regions have been referred to as the eyes of the hand. This valuable sense of touch in which man excels enables him to distinguish and identify differences in texture, in smoothness and roughness of objects and in heat and cold. When this faculty is developed to its fullest potential, skillful procedures can be carried out without direct vision.

Chief, department of endodontia, Lebanon Hospital.

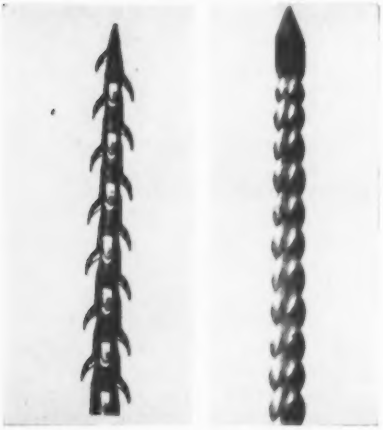

Fig. 1 • Left: Barbed broach. Right: Root canal file

BASIC MANIPULATIVE MOVEMENTS

The basic manipulative movements in the use of root canal instruments are torque, push and pull. Combinations of these primary movements are also used to clean out and widen root canals. To perform any one of these operations, the small and cylindrical handles of root canal instruments are held between the thumb and index finger. If great pressure is exerted, tactile sense is lessened and interpretation of the action of the instrument is difficult, particularly if the root canal is curved and tortuous. Tactile sense is at its best when finger pressure is at a minimum and the force exerted on the instrument is not excessive.

Root canal instruments are perhaps the most misunderstood and misused items in the dental instrumentarium. Many authors and clinicians give the impression that root canals can be prepared accurately by enlarging canals using manufacturers' numbers to express the degree of enlargement, so that when the instrument is laid aside, the canal is assumed to conform to the diameter of the last instrument used. Some have taken the trouble to tabulate the variations in diameter and taper of instruments and consider this lack of uniformity as a handicap to the accurate preparation of root canals. All fail to take into account that the root canals of teeth are distorted geometric forms and that apical orifices, single or multiple, vary in their position in the vicinity of the apex and seldom fit the artists' drawings or conceptions of this critical region.

In actuality, the preparation of root canals consists in creating a pathway through the distorted irregular geometric space of the root canal and enlarging this space sufficiently for the procedures to follow. Since it is a hand operation and not performed on a lathe, the root canal after final alteration will still be a distorted, geometric space. This is particularly true in canals in which there is any degree of curvature.

WORKING SURFACES OF INSTRUMENTS

Far more important than an understanding of these ideas is a thorough understanding of the working surfaces of root canal instruments. With this information the operator can select the correct instrument for the work to be performed, and he will know the best sequence in which to use the various items in his instrumentarium. He will also come to recognize the inherent weakness of each instrument and certain accidents in which these instruments are involved.

The barbed broach (Fig. 1, left) is designed primarily for the removal of pulp tissue. When used properly, it is capable of snaring and impaling pulp tissue for removal. Because of this feature and the importance of tissue removal, many operators have been conditioned to begin instrumentation with the barbed broach. In very wide canals, this choice usually works out satisfactorily. In narrow constricted canals, this instrument has been responsible for bringing treatment to an abrupt end through the jamming and

breakage of the instrument within the canal. Only by understanding the mechanics and design of all instruments can the operator avoid the pitfalls and accidents likely to be encountered in their use.

The barbed broach is a tapered instrument which has deflected outward from its main shaft, pointed triangular barbs, the points of which are sharp and designed to pierce tissue. When this instrument is inserted into a fine canal which has any degree of curvature, the operator may have the feeling that the instrument is snug but able to traverse the root canal. What actually takes place is that the barbs, under pressure, fold against the main shaft of the instrument, permitting its insertion. When the instrument is withdrawn, these barbs tend to regain their original position on the shaft. Attempted withdrawal is now hindered by the barbs engaging the walls of the canal. The more force exerted, the deeper the barbs embed themselves. Repeated manipulation of the instrument in such a situation causes fatigue in the metal which in turn results in breakage.

The root canal file (Fig. 1, right) is designed primarily for the enlargement of root canals. The instrument resembles a tapered elongated wood screw in that it consists of a sharp tapered cutting spear point from which descends a continuous series of inclined planes which increase in diameter as they approach the handle of the instrument. The outside edge of these inclined planes are sharp and represent the active cutting surface of the instrument. Few operators, using this instrument, realize that the spear point mounted on the tip of the instrument is an extremely active cutting surface. Generally, they speak of this instrument as working only on the withdrawal of the instrument from the root canal when actually it is capable of performing work in both directions. Later, it will be shown how important this spear point is.

As with all root canal instruments, the file offers little difficulty when used in wide canals. It is when dealing with fine and curved canals that a thorough understanding is important and tactile sense offers the means of staying out of trouble. Furthermore, the flexibility of the shaft of the instrument is more important than the manufacturers' numbers. If the Kerr file is used as an example, desired flexibility abruptly ends with the no. 3 file and a considerable gap exists between the no. 2 and no. 3 file. There is a great need for a file that will fit in between these numbers for gauge and flexibility.

When the file is used to enlarge a fine and curved root canal, difficulty is encountered if an instrument is selected that is too large and not flexible enough for the upper or curved part of the root. To use the file effectively in the enlargement of a root canal, apical pressure is exerted on the handle of the instrument and the operator twists the handle and exerts a torque action on the shaft. This action forces the spear point ahead, and the inclined planes below the spear point embed themself in the dentin of the canal wall. Whether the instrument can be undone and withdrawn safely depends on the number of inclined planes thus engaged. If this manipulation has been accomplished with great force, the inclined planes will be firmly embedded in the dentin. The operator may have the feeling that the whole instrument is being delivered, but actually only the lower half of the instrument will be turning; the upper part already wedged in dentin remains stationary. Finally, the shaft of the instrument, fatigued by multiple twists, parts, and since the upper part of the instrument was wedged in dentin, its subsequent removal is very difficult (Fig. 2).

The spear point at the tip of the file has a double purpose. It is not only an important cutting surface, but it also serves to lead the instrument into curvatures and opens up the constricted part of the canal for the rest of the instrument. To

Fig. 2 • File broken off in upper lateral incisor through use of excessive force and wedging of instrument.

accomplish this objective, the instrument being used must possess great flexibility and the operator must utilize tactile sense to control the delivery of the instrument (Fig. 3, left). However, if the operator overlooks flexibility during instrumentation and fails to take into account the apical curvatures usually found in upper lateral incisors, cuspids and posterior teeth in general, then perforations of the root canal wall become a distinct possibility (Fig. 3, right). Perforations of this type lead to failure unless apicoectomy can be performed.

The sensation delivered to the fingertips by an instrument as it enters a narrow constriction is quite different from the sensation received when the instrument is perforating the dentin wall of the root canal. Considerably more force is required for perforation as the tip of the instrument encounters the wall of the canal than is needed when it is inserted into the entrance of the canal. Figure 4, left, shows the spear point of an instrument working against a ledge of dentin. The operator was aware of his difficulty since a roentgenogram had been taken to determine what structure the instrument was encountering. The problem could have been resolved successfully if the spear point had been rounded off with a sand paper disk, or if the dentist had changed to a finer gauge, more flexible instrument. Figure 4, right, shows the same tooth perforated by a heavier gauge instrument and the use of excessive pressure. Although the tooth still is salvageable, better judgment should have been used to avoid such a situation, particularly in regions where surgery cannot be performed. By contrast, Figure 5 shows an instance in which an upper lateral incisor with an acute apical curvature was managed by utilizing instruments with great flexibility and by exercising caution and good tactile sense.

All instruments carrying a spear point are capable of creating ledges and causing perforations. Furthermore, all instruments, even with careful use, have the potential of breakage within the root canal. However, it is the file and the reamer that, more often than other items in the instrumentarium, are associated with perforation and breakage. The action of the file and the reamer needs to be analyzed carefully by the operator to avoid embarrassing situations.

The correct use of the file and the reamer calls for the selection of one the taper and gauge of which will permit free and easy insertion to the apex. Veri-

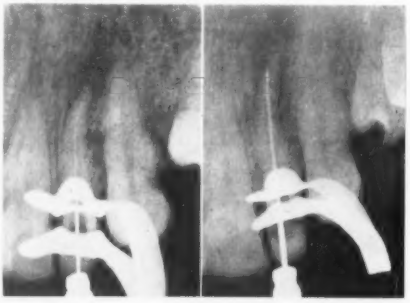

Fig. 3 • Left: A root canal file of sufficient flexibility traverses double curvature of upper central incisor. Right: Same lateral incisor which has been perforated after operator switched to a heavy gauged ridged reamer.

fication with a roentgenogram is a good practice. The selected instrument should be wiggled into position with little or no torque. Most important, the instrument should possess flexibility. On reaching the apex, the instrument is brought into effective action against the wall of the canal and withdrawn. This is repeated until the file used has created a pathway too large for its further use. Succeeding larger gauge instruments, with reduced flexibility, need to be used with great caution to secure the degree of enlargement necessary. If the required flexibility is not available in the desired gauge of file or reamer, then another type of instrument should be used; that is, the rat-tail file which is dead soft and more flexible.

The root canal reamer (Fig. 6) is a fluted instrument with its active cutting surface located along the extreme edge of the spiraling surface of the tapered shaft. This instrument, like the file, is topped by a spear point. It is necessary only to examine this instrument to realize that if it is to be used with any effect, the reamer must be turned so that the blade of the instrument will shave or plane the dentin and, in so doing, enlarge the canal. Since the blade acts only on a turn, this action against any resistance may cause the instrument to snap.

Fig. 4 • Left: Spear point of a file has created a ledge in a lower central incisor. Right: Another view of same tooth after perforation

Fig. 5 • Upper lateral incisor in which excellent judgment was used in instrumentation. Note sharp curvature of apex and successful filling

Furthermore, because of its design, it is less flexible and more brittle than the file in similar gauges.

In a fairly straight, wide canal, the reamer has some merit in that the heavier gauge reamers can be used without distorting and twisting the cutting edge. However, the finer gauge reamers are almost worthless when used in fine canals. Even a modest amount of resistance against the blade of a fine reamer will untwist the reamer and render the instrument useless. The file, therefore, is a more economical and safer instrument to use than the reamer. Figure 7, left, illustrates an upper lateral incisor with a typical curved apex. Here the operator selected a heavy gauge reamer which was forced into the beginning of the curvature of the canal. Repeated efforts to undo the instrument ended in breakage. It would have been better judgment to select a file for this particular problem. Figure 7, right, illustrates the versatility of the file over the reamer. Since it was impossible to dislodge the broken reamer for its removal, the instrument was bypassed by using the more flexible files and the canal was then successfully filled.

Reamers are a necessary item for every

dentist, but precautions need to be set up for their more intelligent use. Here, as in the case of the barbed broach, it is suggested that a file be used first to create a pathway for the reamer. After this preliminary preparation, the reamer is more effective and is extremely helpful in the removal of debris from the canal. The fluted surface of the reamer lends itself well to the collection of debris without too much danger of forcing foreign matter past the apex which is more likely to happen with the file.

The root canal reamer is often helpful in the removal of old gutta percha fillings which have previously been softened with chloroform. However, a dentist can get along well without using this instrument since the file will perform all the services that the reamer will and more safely.

The rat-tail file (Fig. 8, left) is an excellent instrument made of dead soft steel and is extremely flexible in all gauges. The active cutting surface consists of curetlike disks placed at right angles to the shaft of the instrument. It is the most rapid, sharp cutting instrument so far discussed. It is of special value in curved canals and is the ideal instrument for taking over from the less flexible file and reamer when further enlargement is required. This instrument is capable of following curvatures easily and safely.

Fig. 6 • Root canal reamer

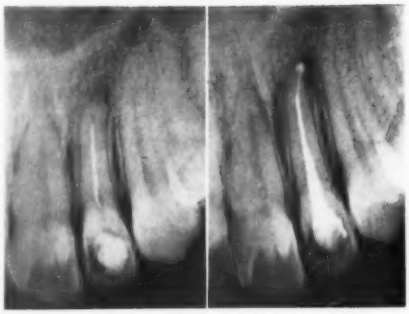

Fig. 7 • Left: A reamer whose blade caught and wedged in dentin and then snapped off and could not be retrieved. Right: Reamer was successfully bypassed with the more flexible file and was successfully filled.

Although this instrument has a spear point, the possibility of perforation is remote because of the soft temper and great flexibility of the instrument. Furthermore, if a necrotic pulp has been present for some time, the rat-tail file is of immeasurable value in lifting necrotic organic matter off the walls of such canals to expose clean dentin. This instrument is capable of replacing the barbed broach for the safe and effective removal of pulp tissue. Because the active elements of the instrument are placed at right angles to the tapered shaft, force exerted either apically or incisally will not cause these parts to lock into the canal wall. Instead, the projections yield in either direction and thus minimize breakage. The rat-tail file should be included in every instrumentarium.

The root canal rasp (Fig. 8, right) is a smooth cutting instrument and its flexibility is limited. The active cutting surface consists of a series of cones which

increase in diameter as they descend toward the handle of the instrument. The active cutting surface is at the base of the cone. There is also a spear point mounted on the tip of the shaft of this instrument. When used properly against the walls of the root canal, it exhibits a fine planing action and is capable of removing scarifications created by the more coarse cutting rasp and file.

This instrument, because of its design, is intended to act on withdrawal from the root canal and is relatively safe to use. Breakage occurs rarely with this particular instrument, although all precautions should be observed nevertheless. It is of special value in the removal of old silver points and occasionally broken instruments. When delivered alongside a foreign body, the base of the cone or cutting part of the instrument is capable of grasping it for removal.

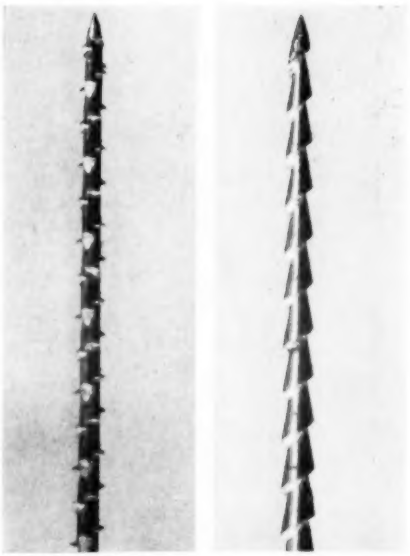

Fig. 8 • Left: Rat-tail file. Right: Root canal rasp

COMMENTS

All the instruments discussed thus far are available in a series of gauges from extra fine to very coarse. A good instrumentarium should consist of at least these basic instruments in all gauges. All of the instruments are made with short handles which can be used on all teeth. The long handle instruments may be dispensed with since the short handle instruments provide for greater efficiency and better tactile sense.

Root canal instruments should be treated as expendable items. They should be discarded if the slightest doubt exists as to whether they can survive their next manipulation within the root canal. The area indicated by the arrow in Figure 9, left, shows the surface of a root canal file which will not survive further use. The inclined planes in this area have been undone by excessive torque action and the instrument is ready to come apart at this point. Figure 9, right, is an example of a root canal file with an acute bend and evidence of excessive torque above and below the bend. Instruments which have undergone this experience should be discarded. Figure 10, right, illustrates a fine reamer and shows the distortion of the instrument and its probable point of breakage.

Corroded instruments should be discarded without question regardless of whether the instrument has had previous service. Danger of breakage can be reduced further if root canal instruments are not used in completely dry canals. Any solution not corrosive to steel will greatly facilitate instrumentation and reduce the friction and strain present when the instrument is used in a dry canal.

An occasional breaking of an instrument in a root canal is unavoidable. The most experienced operator will on occasion have an instrument come apart while being used, even under the very best conditions. When such an incident occurs, it should be accepted as an inherent hazard over which the operator has little control. The dentist does not

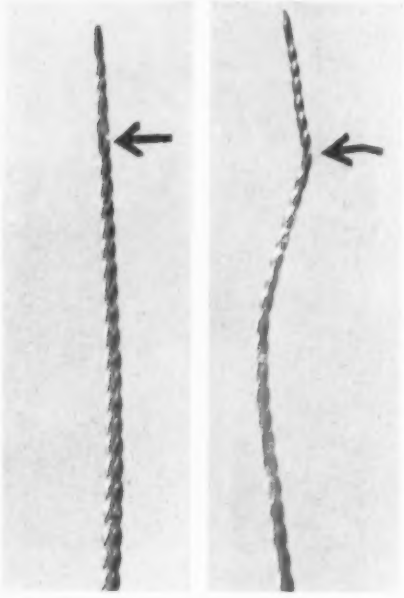

Fig. 9 • Left: Root canal file. Arrow indicates point at which breakage is likely to occur. Note effect of torque on shaft of instrument. Right: Effect of an acute bend on the shaft of a root canal file and evidence of excessive torque above and below the bend.

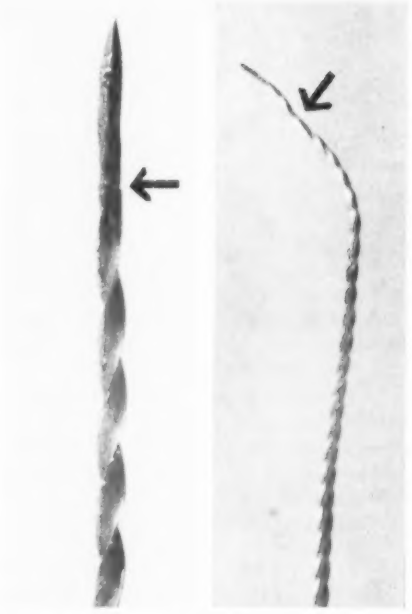

Fig. 10 • Left: Enlarged view of fine reamer where torque action has unwound upper part of shaft. Arrow indicates probable point of breakage. Right: Effect of torque on upper shaft of fine reamer. Arrow indicates probable breaking point.

manufacture these instruments; he can only use them with great care. Furthermore, teeth requiring endodontic treatment are by no means sound teeth to begin with, and patients undergoing endodontic treatment should be made aware of this fact. As in all branches of dentistry, with this particular dental procedure, a variable percentage of success is achieved.

The removal of a broken instrument from a root canal depends on how badly the instrument is jammed, whether it is in the upper or lower part of the canal and whether the canal is curved or relatively straight. In using root canal instruments, excessive force and jamming of instruments should be avoided. Instruments should never be passed through an open flame or subjected to dry, high heat for sterilization. Such procedures tend to change the character of the metal.

In my opinion, root canal instruments can be sterilized safely by means of cold sterilization. The instruments should be completely submerged at all times so that they are available for immediate use. There are many solutions of good quality available. Although cold sterilization is taken as a matter of fact, it has very likely been responsible for a considerable amount of progress in endodontics.

A good instrument is but an extension of the human hand. If the hand is developed to its fullest potential, both in dexterity and tactile sense, then a good instrument becomes a master tool capable of achieving the end result for which it was designed.

39 East Thirty-sixth Street

Measurement of periodontal disease prevalence

Henry C. Sandler, D.M.D., M.P.H., and S. Sigmund Stahl,† D.D.S., M.S., Brooklyn*

A simple measurement, the PDR, (Periodontal Disease Rate) is proposed for epidemiological studies of periodontal disease, because the measurement is meaningful and clinical assessment is easy and rapid.

$PDR = \frac{a}{a + b}$, *in which PDR is the Periodontal Disease Rate, "a" is the number of teeth affected by periodontal disease, "b" is the number of teeth not affected by periodontal disease, and "a + b" is the tooth population of the individual patient.*

A comparison of the Periodontal Disease Rate with the Russell Index for measuring the periodontal disease status of the patient was made on a hospitalized population, and a fairly good relationship was noted between the two measurements. Both measurements are equally good expressions of prevalence.

Although periodontal diseases are among the most common of human afflictions, their epidemiological characteristics are relatively unexplored. Many studies of prevalence in all parts of the world have been published, but their measurement criteria differ to such an extent that comparison is either very limited[1-3] or impossible. The Workshop on Periodontal Disease at the University of Michigan[4] noted that this has "hindered seriously the development of more effective preventive treatment procedures for these diseases." It would be desirable to direct attention to some of the problems of periodontal disease measurement and to arrive at agreement on a single standard.

Absolute precision of measurement is a highly desirable but an unattainable ideal, for no instrument is so delicate nor human eye so keen that it is capable of noting infinitely small differences in the periodontium. Accordingly, every series of measurements or observations contains some degree of observational error. Even the same person repeating the same measurements will introduce observational error if the scale is fine enough. The differentiation between "health" and

*Chief of dental service, Veterans Administration Hospital, Brooklyn. Assistant clinical professor, orthodontia and oral medicine, New York University, College of Dentistry.

†Attending periodontist, Veterans Administration Hospital, Brooklyn. Assistant professor, orthodontia and oral medicine, New York University, College of Dentistry.

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3. Chilton, N. W. Some public health aspects of periodontal disease. J.A.D.A. 40:28 Jan. 1950.

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"disease" is particularly open to broad subjective interpretation, and rarely, if ever, do all of the manifestations of a disease in one patient exactly duplicate those in another. However, although observational error cannot be entirely eliminated, it can be greatly reduced by the development of a stable yardstick, that is, precise and meaningful definitions; and by calibration of the instrument, that is, training of examiners.

Precisely worded definitions are obviously necessary for common understanding. However, periodontal disease includes a variety of abnormalities which stem from known and unknown causes, and no simple definition can possibly describe all conditions. Traditional textbook classifications are valuable aids to understanding of origins, and to diagnosis and therapy, but are not suited to the needs of measurement. Orban[5] proposed one of the best classifications of periodontal lesions as inflammatory, degenerative, atrophic, hypertrophic, traumatic and neoplastic. These categories are not mutually exclusive and may frequently occur together. In any one person, there may be clinical evidence of each class of lesions not only in different teeth, but several types of lesions may affect a single tooth.

The absence of a common standard for designating periodontal disease has led investigators to concentrate on one specific symptom or aspect at a time. The PMA index with its modifications has been very useful for the measurement of gingival inflammation.[6-13] Roentgenographic surveys of alveolar bone resorption were utilized by Black[14] in 1918, and refinements[15, 16] have been proposed since. Clinical studies supplemented by roentgenograms,[17-20] detailed separation of specific symptoms[21-23] and determination of the proportion of individuals who have one or more teeth affected,[20] have all been applied to the study of prevalence of periodontal disease. Some are difficult to apply, and others are of limited significance to the over-all problem of periodontal disease prevalence. None of these methods has been found to be entirely satisfactory.

The importance of roentgenograms in the detection of periodontal bone lesions needs no emphasis. However, conclusions from roentgenograms alone, or from clinical observations alone, can be very misleading, particularly in regard to the less obvious lesions. Early resorption of the crest of the alveolar process is a frequent roentgenographic observation, but

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21. Marshall-Day, C. D.; Stephens, R. G., and Quigley, L. F., Jr. Periodontal disease: prevalence and incidence. J. Periodont. 26:185 July 1955.

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it cannot be detected clinically. On the other hand, clinically evident gingival pockets located on the lingual or facial aspects may not be apparent on roentgenograms. It is, of course, possible to obtain a crude measurement of periodontal disease by clinical examination alone, and it is possible by defining roentgenographic observations to obtain an index of alveolar bone resorption;[16] but neither of these methods permits as accurate an evaluation as can be obtained by a systematic clinical examination supplemented by a complete intraoral series of roentgenograms.

DEFINITIONS OF PERIODONTAL DISEASE

The more advanced the disease, the greater the probability of its detection. Certainly, the more obvious lesions of periodontal diseases present few diagnostic problems. It is the borderline categories which produce the greatest disagreement or "error." The detection of minimal lesions requires intensive examiner training, for it depends to a great extent on the alertness, knowledge, clinical experience and technic of the examiner. Furthermore, incipient lesions may be of the utmost importance in clinical diagnosis and treatment planning, but they are of negligible significance in the assessment of periodontal disease prevalence.

The definitions listed in the following paragraphs were designed to serve as a guide to minimal but unmistakable "periodontal disease." The earliest detectable or incipient manifestations are deliberately underemphasized in order to reduce observational error. However, the minor underestimation resulting from such conservatism is more than compensated for by the added confidence in the ultimate findings.

"Periodontal disease" as herein defined must meet one or more of the following minimal criteria:

1. Gingival necrosis, or hypertrophy, or inflammation encircling the tooth, or a purulent exudate from the gingival crevice.

2. A gingival crevice depth of 3 mm. or more.

3. Tooth mobility greater than 1 mm. in any direction.

4. Roentgenographic evidence of resorption of alveolar bone extending more than 3 mm. apically from the cementoenamel junction.

It should be noted that if diagnosis is doubtful, the condition is classed as negative.

Also, there is no differentiation as to the character of the lesion, its chronicity, degree of bone loss or prognosis.

Disease prevalence has been defined as the "number of cases of a disease existing in a population at any given time."[24] Periodontal disease can be visualized only in relation to the teeth present in the mouth, that is, the tooth population. Each tooth is exposed to the risk of disease and the tooth population of the individual patient must be the basis for any realistic appraisal.

The omission of edentulous persons from studies of periodontal disease prevalence has sometimes been questioned.[2, 20] There is no doubt that periodontal disease is a major cause of tooth mortality[25, 26] and that missing teeth may have some relevance to periodontal disease experience; it can be inferred, however, only that the teeth were lost because of periodontal disease. There is no method for determining the cause of previous extractions and, for all practical purposes, such teeth are a "dead" issue.

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PERIODONTAL DISEASE RATE

The proportion of teeth affected by periodontal disease, as previously defined, is a direct, convenient, simple and meaningful index which lends itself readily to statistical calculation. It may be stated in the form:

$$PDR = \frac{a}{a + b}$$ in which PDR is the Periodontal Disease Rate,

"a" is the number of teeth affected by periodontal disease, "b" is the number of teeth not affected by periodontal disease, and "a + b" is the tooth population of the individual patient.

Example 1: $$PDR = \frac{1}{1 + 31} = 0.03$$

This patient had one tooth affected by periodontal disease and 31 teeth which were not affected.

Example 2: $$PDR = \frac{10}{10 + 10} = 0.50$$

Ten teeth were affected, ten teeth were not affected.

Example 3: $$PDR = \frac{12}{12 + 0} = 1.00$$

All of the 12 teeth in this patient's mouth were affected.

Example 4: $$PDR = \frac{9}{9 + 2} = 0.82$$

Of 11 teeth present, 9 were affected.

Expressed in terms of percentages or PDR per 100 teeth, these examples would read 3 per cent, 50 per cent, 100 per cent, and 82 per cent, respectively. The numerical weight of each tooth increases as the remaining tooth population decreases and this would seem to be a very reasonable relationship.

COMPARISON OF PDR AND RUSSELL INDEX

Russell[27] has suggested an ingenious system of weighted numerical values corresponding to degrees of severity. The periodontal disease status of each tooth is assessed and a numerical value is assigned as follows: 0 = negative (normal), 1 = mild gingivitis, 2 = gingivitis, 4 = early bone changes, 6 = gingivitis with pocket formation, 8 = advanced alveolar destruction.

The total values for all of the teeth in the mouth are added and the sum is divided by the number of teeth present, thereby deriving the mean score.

This index has the following advantages: (1) the periodontal disease status of the patient is condensed into a single numerical value; (2) the scores tend to increase with severity; and (3) the score is based on the population exposed to risk. The disadvantages are primarily those which apply to all weighted indexes. Notwithstanding careful definitions, the degree of emphasis of each weight must be somewhat arbitrary. A mean score of 2.0 would seem to indicate less severe periodontal disease than a score of 4.0 but it does not mean, as might be inferred, that the former is only half as severe as the latter. More important perhaps, is the fact that the resultant value is not as readily understood as is the number of teeth or percentages of teeth affected.

In some respects, the Russell Index and the Periodontal Disease Rate are very similar and each should theoretically approximate the other in any series. If this is true, then the measurement of choice would seem to be the one which can be most readily understood and applied to epidemiological problems.

PROCEDURE

A test of both measurements was applied to a hospitalized population. The oral examination was a part of the total physical examination and consisted of a review of the medical history and record, palpation of nodes and salivary glands, systematic check of all soft tissues, and detailed dental examination.[23] In addition to the medical record, a complete intraoral series of roentgenograms (14 apical and

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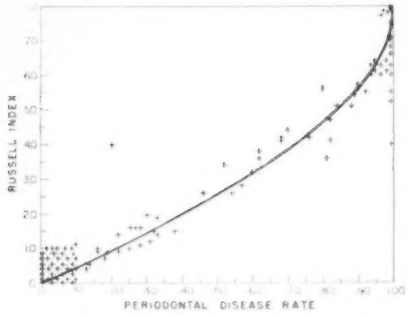


Fig. 1 • Relationship between Russell Index and Periodontal Disease Rate in 100 patients.

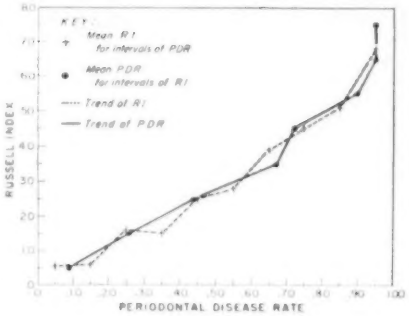


Fig. 2 • Relationship between mean Russell Index and mean Periodontal Disease Rate in 100 patients.

bite-wings) was routinely available at the time of examination. One hundred consecutive patients who had teeth were examined by one examiner, (H.C.S.) and the periodontal status was classified in accordance with the Russell Index and the Periodontal Disease Rate for each patient.

Much more time and attention had to be devoted to establishing the Russell Index than was required for the PDR. This was primarily because, for purposes of the PDR, it was necessary to classify the tooth only as "affected" or "not affected," whereas the Russell Index required the additional assessment of each tooth into one of six categories. When the Russell Index and the Periodontal Disease Rate for each of 100 patients were plotted on a scatter diagram (Fig. 1), it was found that there was a fairly good relationship between the two measurements. Both indexes are in best agreement at the extremes; that is, when little or no disease was found or when all or most of the teeth are involved. The differences tend to be most evident in the middle ranges. Figure 2 represents the means of each array for each interval and the agreement between the mean values seems to be remarkably good.

CONCLUSIONS

The proportion of teeth affected by periodontal disease is a meaningful measurement.

Comparison of the Periodontal Disease Rate with the Russell Index in 100 patients indicates that both measurements tend to produce similar results. Both are equally good expressions of prevalence.

The Periodontal Disease Rate is suggested for epidemiological studies because, (1) clinical assessment is easy and rapid, and (2) "the percentage of teeth affected" would appear to be more meaningful than a numerical index, since it presents results in terms of the units involved.

Man and Atom • Man is not master of the universe because he can split the atom. He has split the atom because he believed in his own unique mastery. Faith led to the material achievement, not the achievement to the faith. *Barbara Ward.*

Public health dentistry: its principles and approach to community programs

Kenneth R. Elwell, D.D.S., M.P.H., Honolulu, T.H.

The public health dentist concerns himself with the dental health of the entire community. There are opportunities in every community for dentists to take the lead in developing effective health programs.

The modern dentist has found himself sought more and more for participation in his community's various health affairs, largely because of the advent of new and significant health measures. Adjustments of fluoride to optimal concentrations in public supplies of drinking water, extensive programs for children involving the topical application of fluorides and corrective dental treatment projects, and many other dental health educational and preventive dentistry programs require the direct attention of dentists. Therefore there is a growing need for sound health program guidance and expert assistance from members of the dental profession in civil, institutional, military and other types of communities.

The needs of the community for the advice and services of the profession have brought challenging opportunities and inevitable responsibilities to each dentist. As a result, dentists must provide better leadership through active participation in the dental health affairs of their separate communities.

APPROACH TO COMMUNITY SERVICE

Many dentists who have had no public health training stand ready and willing to help in resolving their communities' health problems. They ask how they best can apply their talents, education and experience to aid their community dental health programs. The purpose of this paper is to discuss one avenue of approach to answering this natural, reasonable question. Certain basic principles, objectives and practices of dental public health will be considered, and a short analysis of the pattern presented for comparable procedural practices of private and public health members of the profession. By understanding the similarities involved in the resolution of their separate problems, a basis will be provided whereby dentists can participate more effectively in their communities' dental health programs.

DEFINITION OF PUBLIC HEALTH

It has been said that to communicate with understanding it is first necessary to de-

Presented at the Second Asian Dental Congress, Manila, Philippines, March 28, 1958.

Colonel, Dental Corps, U.S. Air Force. Base dental surgeon, Hickam Air Force Base, Territory of Hawaii. 6486th USAF Dispensary, APO 953, San Francisco, California.

fine one's terms. Winslow[1] stated that "public health is the science and art of preventing disease, prolonging life and promoting physical health and efficiency through organized community effort. . . ."

This often quoted definition has been simplified by Knutson,[2] who defined public health in these words: "Public health is people's health. It is concerned with the aggregate health of a group, a community, a state or a nation."

DEFINITION OF DENTAL PUBLIC HEALTH

A committee of public health personnel[3] participating in a University of Michigan Workshop on Dental Public Health Practice accepted the task of developing a good definition to the question, "What is dental public health?" It declared that "Dental public health is the sum total of research, education, prevention, diagnosis, prescription, treatment and evaluation in community dental health care." The same committee has stated that "The distinctive competence required in dental public health relates to responsibility to the community as a patient, as distinguished from the individual, rather than to a difference in functions, activities or programs."

The major element in understanding public health dental practices is this point of view which identifies the community as a single unit of responsibility. For example, topical applications of sodium fluoride to the teeth of individual children is a professional service which can be performed by private practitioners, public health or other professionally competent personnel. The important element in the situation is that the public's dental health has been protected. Public health practices concern the health of people of any community as a single entity of responsibility.

To understand better the place of dentists in public health, it is necessary to know what dentistry can contribute to health. The Michigan Workshop's committee[3] declared that the major contributions to health by dental science relate to the patient's well-being, personal comfort, social acceptance and absence of disease. Therefore these contributions may be divided broadly into considerations of (1) function, (2) psychology and (3) pain or infection. The same general conclusions, also reached by other competent public health personnel,[4,5] were related to diagnosis, treatment and prevention. These three elements are the specific technical areas in which dentists can make a contribution to health. If the individual and the community do not have the opportunity to receive the benefits of dental contributions, undesirable sequelae will result. In turn, these sequelae can be expressed in terms of (1) pain and infections, (2) malfunction and (3) emotional stress. These conditions are related to dental diseases, conditions and anomalies.[4,5]

DENTAL PUBLIC HEALTH OBJECTIVES

The American Public Health Association[6] has matched these potential health contributions of dental science to specific goals of public health practice. The Association declared that the specific objectives of dental public health are: the prevention, early detection and correction of the lesions of dental caries; accurate diagnosis, palliative treatment and

1. Winslow, C. E. A. Untilled fields of public health. Med. Med. 2:183 March 1920.

2. Knutson, J. W. What is public health? In Dentistry in public health, ed. 2. Pelton, W. J., and Wisan, J. M., editors. Philadelphia, W. B. Saunders, 1955, p. 1-10.

3. University of Michigan School of Public Health. Objectives and evaluation of a state's dental program; proceedings of the fourth workshop on dental public health, April 2-6, 1956. Ann Arbor, University of Michigan School of Public Health, 1956, p. 26.

4. Nyswander, B. D. What is health education? Am. J. Pub. Health 37:650 June 1947.

5. Wisan, J. M., and Gruebbel, A. O. Dental health habits; a questionnaire survey. J.A.D.A. 38:19 Jan. 1949.

6. American Public Health Association, Committee on Professional Education. Educational qualifications of public health dentists. Am. J. Pub. Health 42:188 Feb. 1952.

interference with malocclusion at the proper age level; instruction in proper mouth hygiene, and the prevention and treatment of gingivitis and more involved periodontal disease; the surgical and prosthetic treatment of oral clefts and cooperation in speech rehabilitation; the detection and treatment of oral cancer; the prompt treatment of all injuries produced in teeth or jaws by accidents; the production of scientifically accurate information; the motivation of proper oral health habits and attitudes on the part of the public and the development of sound administrative and evaluatory technics for dental health programs.

The broad programs needed to meet the objectives of public health are influenced greatly by the characteristic aspects of various communities. For example, there are often fundamental differences between communities involving the component elements of the over-all problems of local dental health. Among the more important general considerations are: (1) extent and local significance of dental problems, (2) attitudes, interests, values and customs of the community in dental health problems, (3) the socioeconomic factors as related to dental problems. These factors, which affect deeply the response of a community or large public groups, must be understood in order to develop effective health programs. Public health practice seeks to determine these important facts and to develop programs which are in consonance with the local social, economic and psychological factors as well as with those technical or professional factors which relate directly to health.

COMPETENCE AND FUNCTIONS OF PUBLIC HEALTH DENTISTS

Certain relationships of public health dentistry which concern applications of dental science to objectives or goals of community health programs have been considered in this discussion. At this point, the special functions of those individuals who have a distinctive competence in preparing and executing effective programs in dental public health should be considered. These highly qualified people are the public health dentists. Knowing their functions not only may develop a better understanding of public health but also may provide some useful suggestions for other dentists who are interested in participating more effectively in local dental programs.

The committee on professional education of the American Public Health Association[6] and the Michigan Workshop's committee[3] have considered most carefully the functions of public health dentists. According to the Michigan Workshop committee, the functions of public health dentists are:

1. To possess knowledge of administrative practice.

2. To possess knowledge of and skill in public and human relations.

3. To be able to advise and assist in the design, development, administration, and evaluation of a community's dental health program.

4. To be able to determine the community's needs for diagnostic and dental-care facilities and to assist in their provision.

5. To be able to understand the community's organizational functions and to be competent in determining the community's health-needs.

6. To be able to evaluate the findings of research, tests, and methods of application and to determine needs based on experience with a community. . . .

7. To have a knowledge of the principles, methods and media available in dental health education, and competence to evaluate the content of material, and to advise and assist in the development of dental health educational programs.

8. To evaluate the dental services as they meet the community's needs and to advise and assist in the extension of dental training in order to improve services when the community's need has been shown.

9. To have a broad understanding of the social and behavioral sciences as they affect the promotion of health and prevention of disease in the community.

PROCEDURAL PATTERNS FOR HEALTH PROGRAMS

Professional public health personnel develop good community programs using the same general approach, and fundamentally the same procedures, as private dentists employ in resolving clinical dental problems for their individual patients. Knutson[2] summarized the similarities of these approaches by discussing six analogous elements (see the table). The analogy offers valuable assistance to every dentist in meeting his community's problems.

RELATIONSHIPS OF PERSONAL VERSUS COMMUNITY PROCEDURES

Knutson[2] has related clearly the procedural patterns of private and public health dentists. The essence of these relationships may be presented best by briefly discussing each of the six comparable elements.

Examination-Survey • An examination of the private patient is conducted by taking a case history and using clinical, roentgenographic and laboratory procedures to determine facts about the health of the individual. The survey of a community is identical in its purpose. Therefore the survey is simply another term for an examination of the community. Just as the private patient has a "chief complaint," so may the community. For example, the chief complaint of a community may be a question concerning why a new preventive practice is not being used in the area. The survey is used to examine the dimension and characteristic factors about such a specific health problem of the community. The survey could include a determination of such elements of the problem as the numbers of people involved, local socioeconomic facts, psychological factors and the resources of the community to render the care needed.

Table • Summary of procedural patterns[2]

Personal	Community
Examination	Survey
Diagnosis	Analysis
Treatment planning	Program planning
Treatment	Program operations
Payment for services	Finance
Evaluation	Appraisal

Diagnosis-Analysis • The second step involves identification of the problem. In the case of the private patient, the observations made and the facts obtained by examination are analyzed and lead to the diagnosis. Similarly the data compiled in the survey of a community are organized to provide understandable figures which then are used to simplify identification of the problem. For example, analyses of data may be greatly aided by using statistical tools. Easier comparisons may be obtained by simply grouping data and deriving common descriptive constants such as the mean, the median, the range and the standard deviation. In short, both the private patient and the community have their health problems that can be identified in similar fashions.

Treatment Planning-Program Planning • The third step in these corresponding patterns concerns plans to resolve each of the problems which have been identified. All factors must be weighed in planning to treat dental health conditions of individuals. For example, the ideal treatment plan often must be modified before it can or will be accepted by the patient. The type of treatment chosen by a patient usually is influenced by his resources, attitudes and values. In a like manner, the ideal program plan of public health often will be modified by the influences of the community's resources, attitudes and values. It should be noted that the values of the ideal program must compete with other requirements or de-

sires of the patient and the community. In each instance, the final plan selected usually is a resultant of these competing forces.

Treatment-Program Operations • Treatment-program operations in the procedural pattern involve the action of implementing the plans. The private dentist arranges and carries out the plan of treatment agreed on with the patient. The dentist will be responsible for coordinating the efforts of any specialists required as well as for carrying out his own treatments for the patient's benefit. Similarly, public health personnel have a responsibility for over-all coordination and administration of the efforts of the various disciplines needed to resolve a community problem. An example of this would be found in areas where the program concerned fluoridation of communal supplies of drinking water. Such a project requires expert coordination by public health personnel of the services of dentists, engineers, chemists and waterworks operators. Local dentists are needed to gather baseline data on the prevalence of dental caries; engineers must determine the type of equipment; chemists are essential to make analyses of the water and waterworks personnel will add proper amounts of fluorides to the water supply.

Payment-Financing • The next procedural step concerns money. Everyone is familiar with the fact that private patients pay or arrange to pay for services agreed on with the private dentist. Such agreements usually are made prior to starting the treatment plan. However, in public health practice, community programs are financed by funds which are appropriated by the local governing body. Such funds may be supplemented by contributions of civic, social or voluntary organizations which may have either official or nonofficial status. Continuation of such financial support will be determined by a community awareness and response to a demonstrated need for the program.

Evaluation-Program Appraisal • The sixth and final step in the procedural pattern concerns a determination of accomplishments. Evaluation of results of the treatment plan can be made objectively only when careful records of the initial conditions have been kept for comparison with records of subsequent observations and examinations. Likewise, the data from the original survey are used not only for the program planning phase but as a baseline for future assessment of the program's effectiveness. One important fact to remember is that the private practitioner or the public health worker is not the only evaluator of private or community programs. The individual patient and the community are also appraisers. It is their evaluations which ultimately will determine the confidence placed in either the private dentist or the public health worker.

APPLICATION OF PUBLIC HEALTH PRINCIPLES AND PROCEDURES

The similarities between the procedures employed by private and public health dentists in solving their respective problems have been emphasized in the preceding discussion. The significant conclusion is that the long and intensive education of dentists has provided them with practical knowledge necessary for the solving of public health problems. It has been noted particularly that the application of patterns of approach are fundamentally the same whether the patient is an individual or a community.

Dentists in every conceivable type of dental practice will find many practical applications of a working knowledge of the practices of public health. Such a knowledge must be coupled with the liberal use of existing professional skills of the dentist. These elements, plus initiative and enthusiastic interest, should

enable dentists to welcome their opportunities and responsibilities for dental health programs in their own communities. As mentioned before, the effectiveness of dental programs usually depends on the competence and sound guidance of dental leaders. In turn, the quality of the leadership often will depend on these leaders' comprehension and application of pertinent public health principles, procedures and practices.

CONCLUSION AND SUMMARY

Many occasions arise in every type of community for dentists to aid as leaders in the development of effective health programs. The scope, objectives and emphasis in community dental health programs will vary with the local attitudes, values, economy and interests of each civilian, institutional, military or other type of community. Dentists who understand all related aspects of local situations should be prepared to welcome opportunities to serve their communities and to fulfill their responsibilities, not only with competence but with distinction. It is within the reach of every dentist to enrich his life and that of his community by his wise counsel and personal participation in the establishment and operation of effective dental health programs for his own community.

Modern dentists have noted a growing need for their active participation in health programs of their communities. The programs to adjust concentrations of fluorides to optimal levels in communal water supplies and the various school and community dental health programs have been important influences in producing this civic need for the help of dentists. To provide the expert leadership, guidance and assistance sought in these health programs, dentists should develop a better comprehension of the principles and approach of the professional workers in public health. Dentists should be prepared to relate their own talents and experience to the dental health problems of each community. To achieve this purpose, dentists must recognize the pronounced similarities between the procedures used to accomplish a treatment program for an individual patient and those employed to accomplish a dental health program in a community. Finally, dentists serving in every type of community can and should respond to the challenge of their opportunities for service by providing the counsel and assistance needed to develop more effective dental health programs.

Art and Science • All great art and all great science spring from the passionate desire to embody what at first was an unsubstantial phantom, a beckoning beauty luring men away from safety and ease to a glorious torment. *Bertrand Russell.*

editorials

The Centennial provides dental societies with another means to improve dental health

As the dental world knows, this year marks the one hundredth anniversary of the American Dental Association. On February 9 the year-long observance of the event was launched during the Midwinter meeting of the Chicago Dental Society. After this initial meeting, a series of Centennial meetings will be held by state and local dental societies which will be highlighted by the Association's five-day Centennial Session in New York City September 14-18. Actually the one-hundredth annual session will be international in character as the Fédération Dentaire Internationale will hold its 47th annual meeting in conjunction with the Association. The Centennial Committee has spared no time, effort or money in the preparation of the scientific and social programs, and members may be assured they are the best ever presented in the one hundred year history of the Association.

The principal object of these multiple meetings—international, national, state and local—is to commemorate the establishment of the Association and honor its founders and builders. They have, however, another and more important object—that of stimulating the public's appreciation of good dental health. In this regard the state and local meetings may be more effective than the national or international meetings, for it is on the local level that intimate contacts are made, opinions formed and habits molded.

The Association's Centennial Committee is most appreciative of the cooperation received from the local dental societies and of the efforts they are putting forth to make the Centennial celebration so successful. It is the cooperation received at the community level that makes a nationwide program successful and a national organization strong. That is a fundamental long known to the profession and one practiced by the Association since its inception. At the organizational meeting of the Association[1] in 1859, its founding fathers resolved "That this Association suggest to dental practitioners residing in sections of the country where there are no local societies the propriety of forming such associations. . . ."

Fifty years later, C. N. Johnson,[2] one of this century's greatest dental leaders, revoiced the plea of the profession's pioneers:

No one can doubt the benefit to dentistry of our State and National dental organizations. Whatever their shortcomings, they have been instrumental in giving a status to the profession and commanding the attention of the public in a way that no other effort could have approached. Their scope is wide and they deal, or should deal, with the larger events and interests of the profession.

But so far as specific and practical benefit to the individual is concerned, the local society must be given credit for accomplishing more good than any other one factor. There is no individual isolation in the local society. Men come together face to face, elbow to elbow, and heart to heart. They criticize freely and commend freely. There is a rapid-fire exchange of ideas which stimulates thought upon the very things that are done every day in the office. And this is what helps men to do better work for their patients. A paper upon the larger issues of the profession read before a national meeting may broaden a man's ideas and make him a better thinker. It is necessary to the advancement of the profession that we have such papers, and yet the little practical things that are freely given and taken at local meetings are just as important in our daily work, and really bring a more immediate return in the betterment of practice than most of the material presented before the larger societies.

The appreciation of strong local dental societies, expressed a hundred years ago by the Association's founders and revoiced by the next generation of dental leaders at the turn of the century, has once more been re-emphasized by a dental leader of today. Percy T. Phillips, president of the Association, reminds local dental societies that they are the foundation stones upon which the Association is built, and that their strength depends in no small measure on the strength of their public and professional relations activities. "For it is at the local or community level where neighbor rubs shoulders with neighbor that public opinion is formed. State and particularly local dental societies, by taking advantage of the Association's centennial year, have an exceptional opportunity to extend their public relations activities and thereby improve the public's understanding and appreciation of better dental health."

1. American Dental Association. Transactions 1859, p. 7.
2. Value of local dental societies. Editorial. D. Rev. 20:746 July 1906.

Dental Relief Fund: give your mite now; you may need it returned a thousandfold later

Disconcerting news comes from the Council on Relief. Contributions to the Association's Relief Fund are running ten per cent lower this year than last. This, in spite of the fact that the Association is enjoying the largest membership in history and the country its greatest period of prosperity. Unless the trend turns for the better, the Relief Fund will not reach its annual goal of $100,000. Failure to do so will cast a reflection on the humanitarianism of the profession.

Since long before the days when dentistry became a profession, it has been the custom—if not the obligation—for dentists to come to the aid of each other when illness or other circumstances caused prolonged absence from the office. No dentist who has practiced for any appreciable length of time has escaped that experience—either as giver or receiver. Such aid is provided on a personal basis, as a demonstration of professional solidarity.

Gradually, as dentistry grew in prestige and numbers, this personal relationship between one confrere and another widened in scope and character so that most members of the profession began to feel some obligation to provide assistance to fellow practitioners overwhelmed by misfortune.

Younger members, who may not be familiar with the history, purpose and accomplishments of the Relief Fund are referred to two articles on the subject which have appeared in THE JOURNAL in recent years.[1,2] Some of the more important points brought out in those two articles are as follows:

1. The American Dental Association Relief Fund is an independent entity. All moneys placed in this living trust are protected legally from attachment.

2. Only the interest from the principal fund may be used for relief purposes. The principal fund must remain intact.

3. Grants from the fund can be used only for the relief of destitute dentists and their families.

4. One half of each dollar donated is returned to the state from which it was contributed for the relief program of the state dental society.

5. The eligibility of a relief applicant is determined at the local and state level. Once the applicant's needs are agreed upon by his local confreres, the cost of the benefits provided are shared equally by the state dental society and the Relief Fund of the Association.

6. The American Dental Association finances all costs of the program—estimated at about $20,000 annually—thereby eliminating all overhead or operating expense.

7. Spiraling prices and the decreasing value of the dollar affect relief recipients as much as they do everyone else, hence the need for a little larger grant to each relief recipient and a little larger donation from each contributor.

8. Recipients are fellow dentists or their families. As professional people they are entitled to, and should receive, a somewhat higher standard of relief living than those who, during their lifetime, have not contributed nearly as much to society.

A hundred thousand dollars is a very modest annual goal to set for an organization of 81,000 active, earning, professional men and women—$1.25 per member—less than most of us waste each week on nonessentials; less than many spend on injurious pleasures and pastimes.

If you have overlooked sending in your contribution to the Relief Fund this year, please do so now. Mail it to the American Dental Association Relief Fund, 222 East Superior Street, Chicago. The Fund must make its quota this year. With your help it will do so.

1. The Dental Relief Fund, 1907-1957: fifty golden years of service. J.A.D.A. 55:704 Nov. 1957.
2. Cruttenden, Louis M.: A.D.A. Relief Fund: a voice in the wilderness. J.A.D.A. 57:536 Oct. 1958.

international correspondence

News from Great Britain

GENERAL DENTAL COUNCIL

The President, Sir Wilfred Fish, in his address at the opening of the Eighth Session of the council, dealt with many matters of direct importance to the dental profession, among which were:

Anticipated Reduction in Register • "For various reasons it is anticipated that the number of names in the register on January 1, 1959, will be below the figure of 16,000 which was reached for the first time two years ago." Sir Wilfred said that "the fact that this number is going down instead of up emphasizes the urgent need for the recommendations of the McNair Committee to be implemented, and for an enlightened, vigorous and effective effort to be made to remove the obstacles in the way of a sufficient influx of young dentists into the profession."

Recruitment • Sir Wilfred dealt with this problem at some length and in particular brought out the following points:

"The interest of the General Dental Council toward improving the entry into the dental schools is twofold. First, as the body charged with the duty of keeping the Register, we have a special concern with maintaining numbers, a concern which has been acknowledged both by ourselves and by our predecessors, the Dental Board, ever since it was first established. No one will dispute that an adequate supply of dental services—and before anything else that means enough competent dentists—is a matter of national concern to be provided for by government. But that is not to say that the profession has no responsibility in the matter. We no longer regard it as our duty to help to build dental schools or subsidize university education but we should be imprudent if we did not follow the other professions which bring the facts about the careers they offer to the notice of promising young people, if not from a disinterested regard for the public welfare, then at least from an instinct for self-preservation.

"Our second ground for concern with recruitment springs directly from the Act which gave us birth. As a body brought into existence to maintain high standards of professional education and professional conduct among dentists, we could not, even if we wished to, divest ourselves of responsibility for the quality of the young people who enter the dental profession.

Council Scholarships • "The view continues to be expressed among dentists that the General Dental Council scholarships ought to be wholly or mainly reserved for the relatives of dentists. This suggestion is not new and arises out of a misconception of the purpose of the scholarships. The object is to bring to the notice of all boys and girls at public, grammar and other secondary schools the fact that dentistry provides a satisfying university discipline for pupils with a scientific bent and to do this in the most practical and therefore the most effective way we can contrive. This object would be completely defeated if the scholarships were available only to the children of dentists or if other young people were handicapped in competing for them.

Ancillaries • "Closely related to the subject of dental manpower is the provision of ancillary dental workers. So far as dental hygienists are concerned, our responsibility is only to approve arrangements for their training and we have not as yet received any request to do so. We have, however, been advised that the

Minister of Health and the Secretary of State for Scotland have invited the dental teaching hospitals to take part in a training scheme. In addition, progress is being made with the experimental scheme for the training and employment of dental auxiliaries and our estimate of the cost of training 60 girls a year, based on the Council's proposals, has been submitted to the Ministry of Health. If our estimate can be approved soon enough, there is some prospect that we shall be able to launch the experiment in October, 1959."

Sir Wilfred dealt with such subjects as Statutory Examinations, recognition of Commonwealth Diplomas, temporary registrations and Dental Board films, and concluded by alluding to a topic that has received some public notice recently, namely, the responsibility of representatives elected to public bodies and other groups. Speaking directly to members of the Council, Sir Wilfred said "If members were to regard themselves as being irrevocably committed to some particular policy by those who elected or nominated them, despite the fact that the policy might conflict with the purpose and duties of the Council as they are unfolded in debate, they would not only cease to serve those whom they represent but could even become obstructive and inflict on the profession a policy which had been shown to be defective when critically examined in Council. For themselves they would lose the intellectual pleasure and exhilaration of trying to discover the wisest policy to commend to the profession, and might well disqualify themselves from holding office where impartiality and an open mind were of its very essence."

GENERAL MEDICAL COUNCIL

The centenary of the General Medical Council was celebrated last November and was of particular interest to members of the dental profession, for the Act of 1858, which gave birth to the General Medical Council, also provided for the grant of a Charter to the Royal College of Surgeons by which they were empowered to grant the L.D.S. Diploma and when, two years after the passing of the Act, this power was duly exercised, the practice of dentistry as such acquired a status in law and a separate dental profession was inaugurated.

According to Sir Donald MacAlister (president of the General Medical Council, 1904-1931) "Dentistry was put under the Medical Council because there was no corresponding existing body or constituency from which a body could be appointed for the dental profession." Thus, for 80 of the 100 years of its existence, the General Medical Council had acted *in loco parentis* to the developing dental profession with wisdom and understanding and the old Dental Board and new General Dental Council owe a great debt to the General Medical Council for the example and experience gained which enables them to successfully build their own institutes, and to establish proper rules of conduct and a sound administrative structure.

ITEMS OF INTEREST

Details of the fourth Gibbs Travelling Scholarship have been announced, the previous three having taken the winners to the U.S.A., Scandinavia, Italy, Switzerland and Western Germany. On this occasion, the scholarship takes a different form. Three members of the dental profession will be assisted, by a grant of £150 each, to visit the 100th anniversary session of the American Dental Association and the 49th annual meeting of the F.D.I. in New York from September 14-18. They will be required to study developments in preventive dentistry within the program of the meeting and to report on the impact of dental health education on the American man-in-the-street.

The Anglo-Continental Dental Society has arranged that Professor Dr. P. O. Pedersen of Copenhagen will lecture at its spring meeting in London May 8-10.

The many friends both at home and abroad of A. Maxwell Horsnell will wish to congratulate him on his appointment to the Chair of Dental Science at Adelaide Dental School and University and to wish him and his family the best of good fortune in their new home.

In the December 16 issue of the *British Dental Journal* is published a discussion by four members of a panel on "The Use of High Rotational Speeds in Conservative Dentistry"; this is of great value to all dental practitioners.

G. H. Leatherman,
D.M.D., F.D.S., R.C.S., F.A.C.D.

news of dentistry

Association centennial officially opened with Chicago luncheon addressed by Burney

The centennial year of the American Dental Association was officially opened February 9 with a civic luncheon at the 94th midwinter meeting of the Chicago Dental Society. The luncheon, held in the Conrad Hilton Hotel, was addressed by Percy T. Phillips, president of the Association, and Leroy E. Burney, Surgeon General, U. S. Public Health Service. Many distinguished guests were in attendance. Greetings were extended by Mayor Richard J. Daley and by George W. Teuscher, president of the Chicago Dental Society. William T. Osmanski presided.

"It is particularly fitting that the 'opening gun' of dentistry's centennial of health service to the American public should be fired in Chicago," said President Phillips. "Chicago is the home of the American Dental Association, of three great dental colleges and of the Chicago Dental Society."

The past half century might well be termed dentistry's "era of adolescence," said the speaker. "We have seen the discontinuance of proprietary dental colleges, the demise of proprietary dental journalism, the development of dental specialty programs and of postgraduate training, and the start of dental service in hospitals. There has been a fuller utilization of auxiliary personnel. Licensure has become universal. The importance of public relations has been brought home to the profession. The need for support for dental research has become recognized by government, industry and philanthropy. Water fluoridation has received broad acceptance. Practical autonomy for dentistry in the armed services has been established. Society has recognized dentistry as a full-fledged member of the health team."

The centennial year was a time for looking not only backward but forward, said President Phillips. Among dentistry's goals for the next century of health service to the American people were the following, he said: A closer relationship between the art and science of dentistry; expanded research in the etiology of oral diseases, in prosthetic materials, in pharmaceuticals, in operative and restorative technics, and in the greater use of auxiliary personnel. "We must counsel society on the availability of dental care and of how best the goal of a longer, healthier

Shown at the Centennial Civic Luncheon of the 94th Midwinter Meeting of the Chicago Dental Society last month are (left to right): Dr. Leroy E. Burney, Washington, D. C., Surgeon General of the U. S. Public Health Service; Percy T. Phillips, Association president, and George W. Teuscher, president of the Chicago Dental Society and dean of Northwestern University Dental School.

life may be attained without lowering the quality of service available," he said.

Among the pressing problems of dentistry are dental treatment for geriatric patients, inclusion of dentistry in workmen's compensation laws, the financing of dental care through health and welfare funds set up by industry and unions, experiments in prepayment plans, inclusion of dentistry in Blue Cross, Blue Shield and similar programs, the furthering of hospital dental service, and problems involving group practice and third party contracts.

BURNEY ON DENTISTRY

"This year, 1959, sets a major milestone in the history of American dentistry," said Surgeon General Burney. "One hundred years have elapsed since a handful of dedicated dentists formed the American Dental Association as a national organization to establish and maintain high professional standards and to promote the art and science of dentistry. Today, not only the members of the dental profession but our whole nation as well can be justly proud of the great heritage of American dentistry. Its emergence as a learned profession, its many pioneers in dental research and education, in clinical and public health practice, have placed dental care in the United States at the front ranks, second to none in quality. . . .

"The broadening horizon of dental research and practice are revealing an ever-closer relationship between dentistry and medicine on the one hand, and between progress in both professions and the health of mankind on the other. Public health as a specialty of both dentistry and medicine serves as an intermediary in bringing the benefits of dental and medical progress to bear upon the population as a whole; and in reverse, to channel society's resources toward the advancement of dentistry and medicine."

In the past year, research scientists at the National Institute of Dental Research had completed the first phase of a long-range basic research program concerned with the manner in which lysine and lysine peptides are used in the process of protein synthesis in men and animals, said Dr. Burney. Long-range clinical trials were proceeding in the use of dibasic calcium phosphate in the diet of children, as a means of reducing dental caries.

"Biological science is never content with finding one cause, one cure, one preventive. The use of fluorides in public water supplies and topical treatment of children's teeth already has begun to reduce the dentist's burden of dealing with

uncontrolled caries in many parts of the country. It is certain that this preventive could never be applied in all parts of the country, nor in vast rural areas of the world where caries prevails. An effective dietary control of dental caries may now be in the making to supplement and extend the protection already available through fluorides and good dental care."

MORE DENTISTS NEEDED

"Whereas we are now unable to provide adequate dental care for 175 million Americans, we must be prepared to provide care for more than 200 millions by 1970," said the speaker. "Even assuming that no larger proportion of the population seeks dental care, we must have an increasing number of dentists and dental assistants to serve the scant 40 per cent of the American people currently seeking dental care. . . . Currently, our dental schools are graduating about 3,100 students a year. To do no more than maintain the current ratio of dentists to population, that figure must reach almost 6,200 within the next ten years. We must have more dentists, more dental schools. . . .

"The dental profession has lagged somewhat behind hospital administration, organized medicine, and private insurance in the development of prepayment plans or dental service insurance, whereby groups and individuals may finance their dental care expenses as they do their major hospital and medical care expenses. It is of the greatest potential significance to the oral health of this country that several state dental associations have established dental service plans. Others are expected to follow shortly."

CENTENNIAL RESEARCH AWARD TO SEYMOUR H. YALE

More than 15,000 dentists and representatives of allied groups from throughout the United States and from many nations abroad attended the four day annual meeting of the Chicago Dental Society, February 8 to 11, society representatives announced. Dentists in attendance heard essays on many dental subjects, and saw demonstration clinics, some on closed circuit television. There were more than 250 scientific, health, educational and technical exhibits.

A plaque emblematic of the annual $500 cash award for the winning research work in the 18th annual competition—known this year as the "Centennial Research Award"—was presented to a University of Illinois team of dental scientists for a study, "Oral changes in normal and scorbutic guinea pigs injected with ascorbic acid-1-C^{14}." The award winners are: Seymour H. Yale, professor and head of the department of radiology; Henry Jeffay, assistant professor of biochemistry; C. I. Mohammed, histologist (now at the University of Puerto Rico), and Edward C. Wach, emeritus associate professor of applied materia medica and therapeutics. The skills of three basic sciences were utilized to show that vitamin C reaches soft tissues surrounding the teeth within five minutes after injection into the abdominal cavity.

A report was made at the meeting that 8,735 Chicagoans had financed their dental work in a little less than four years through the postpayment budget plan of the society, carried out in cooperation with the First National Bank of Chicago. From April 1, 1955, through December 31, 1958, dental budget loans in the amount of $2,490,507 were handled by the bank for patients of 1,712 dentists enrolled in the program.

RELIEF FUND HITS 92.7%: $12,000 BEHIND LAST YEAR

As of February 15, the Relief Fund of the Association had reached 92.7 per cent of its goal of $100,000. This means contributions are lagging $12,000 behind last year's of the same date.

Percy T. Phillips, president of the American Dental Association, receives a roll and key to the capital city of Puerto Rico from Madame Felicia Rincon de Gautier, mayor of San Juan, at a reception in the city hall honoring Dr. Phillips. He was the principal speaker at the annual meeting of the Puerto Rico Dental Society.

H. R. Bleier of Milwaukee, chairman of the Council on Relief, urged all members to send in their contributions as soon as possible, pointing out that the increased cost of living makes it more difficult than ever for dentists in need of aid to stretch the money allotted to them from the Fund.

Contributions should be mailed to the A.D.A. Relief Fund, 222 E. Superior St., Chicago 11.

LABORATORY SURVEY RETURNS HIGH, PROCESSING BEGINS

Approximately 25 per cent of the questionnaires which were sent in 1958 to dental laboratories throughout the country have been returned, according to the Council on Dental Trade and Laboratory Relations, which is conducting the survey project in conjunction with the Bureau of Economic Research and Statistics.

More than 1,600 completed questionnaires are now being processed. The Council and the Bureau expect to begin publishing the survey data in the May issue of THE JOURNAL and will continue to inform members of the Association of the results of the survey in subsequent issues.

JUDGES NAMED FOR NATIONAL SCIENCE FAIR IN HARTFORD

Judges have been named by the Association to select the winning exhibits in dentistry and dental science at the 10th National Science Fair in May.

They are: Arthur W. Easton, Norway, Me., First District Trustee; Raymond J. Nagle, dean of the New York University College of Dentistry; Seymour J. Kreshover, associate director of the National Institute of Dental Research, Bethesda, Md., and George C. Paffenbarger, Washington, D. C., director of the American Dental Association's research division at the National Bureau of Standards.

The two top honors include an expense-paid trip to New York for the final-

ists to display their exhibits in the scientific program of the Centennial Session of the Association in September. The Science Fair will be held May 6-9 in Hartford, Conn.

BRONZE PAPERWEIGHT WITH MEDALLION AVAILABLE SOON

A handsome, solid bronze paperweight, with the Association's Centennial medallion stamped on the top of it, will be available shortly after the first of March. The paperweight, which is three inches in diameter, is backed with felt.

Societies desiring to purchase in quantity will be able to secure a reduction in the cost which is $2.50 each. Individuals or groups can order the paperweights directly from The Metal Arts Company, 742 Portland Avenue, Rochester, New York.

SEVEN MORE INTERNSHIP PROGRAMS APPROVED BY A.D.A.

At the February meeting of the Council on Dental Education of the Association, the following rotating dental internship programs were approved:

Veterans Administration Hospital, West Haven, Conn.; Veterans Administration Hospital, New Orleans; Veterans Administration Hospital, Albany, N. Y.; Franklin Delano Roosevelt Veterans Administration Hospital, Montrose, N. Y.; Veterans Administration Hospital, 1st Avenue at East 24th Street, New York City; Veterans Administration Hospital, Cleveland, Ohio, and United States Public Health Service Hospital, Fort Worth, Texas.

ASSOCIATION PROTESTS UNFAIR ATTACK BY COLUMNIST

The Association has issued a sharp protest against a column by a syndicated Hearst writer, Jim Bishop, that appeared February 2 in newspapers throughout the country. The column emphasized a terror of dentistry and asserted that no profession has advanced less. In a letter to the columnist, the Bureau of Public Information described the column as "irresponsible journalism" and said in part:

> The American Dental Association has received a flood of protests from members of the profession throughout the country regarding your column on dentistry on February 2. Not only was the column a grossly unfair attack on a major health profession but also, and more importantly, it constituted an extremely grave disservice with respect to the health of the public. . .
>
> The record of the profession in the United States is one of outstanding health service to the American people . . . To give to the public the impression that the profession has failed of advancement is to deter individuals from preventive care until irreparable damage is done.

A similar protest on behalf of the Association was issued to Mr. Frank L. McLearn, director of King Features Syndicate, 235 East 45th Street, New York, distributors of the column. Although many dental societies and individual dentists have already protested the column in letters to their local newspapers, it is suggested that dental societies and individual dentists in areas where the column appeared may wish also to write to the syndicate or Mr. Bishop in care of the syndicate.

CENTENNIAL CLINIC PROGRAM TO SHOW STUDENTS' SKILL

With the objective of demonstrating the high level of competence of the dental student in the United States, the Council on Membership of the American Dental Association has embarked on an unusual project.

Financial sponsorship of the Centennial Student Clinic Program has been offered by the Dentists' Supply Company of New York. Through this grant one outstanding student clinician from each dental school in the country will be sent to New York with expenses paid to present a table clinic at the Centennial Session.

The Centennial Student Clinic Program will be presented at 2 P.M. September 14 in the clinic hall of the Coliseum. It is expected that a participant from each of the 47 dental schools will be present. Each school will select its own undergraduate whose travel expenses will be paid and who will also receive $50 for additional expenses.

Percy T. Phillips, Association president, says, "It is hoped that the interest in the program this year will be a stimulus for the holding of clinic programs in more dental schools in the years to come."

The Centennial Student Clinic Program is under the direction of L. M. Cruttenden, assistant secretary of the Association.

COUNCIL ACCREDITS PROGRAM AT FAIRLEIGH DICKINSON

The Association's Council on Dental Education, at its meeting February 4, voted to accredit the first three years of the dental education program at the School of Dentistry of the Fairleigh Dickinson University in Teaneck, N. J., as fully approved.

It is customary for the Council to review programs during their progress and also at the time that all four years of the programs are in operation. The first class will be graduated from the School of Dentistry of Fairleigh Dickinson University in June 1960.

ROOM REQUESTS FOR NEW YORK SESSION POURING IN EARLY

Over 2,500 applications for housing in New York during the centennial session of the Association have already been filled.

Meetings of the House of Delegates will be held in the Waldorf-Astoria and scientific sessions and exhibits will be held in the Coliseum.

Of the 28 major hotels that have pledged accommodations to the Association's Housing Bureau, seven have already been filled. These are the Algonquin, the Barbizon-Plaza, Essex House, the Park Sheraton, the St. Moritz, the St. Regis, and the Sheraton-East.

Members are urged to send in without delay the application form which appears on page 2 of this issue of THE JOURNAL if they wish accommodations arranged by the Housing Bureau. Four choices of the remaining 21 hotels listed on the map must be submitted.

STANDARDIZATION OF DENTAL X-RAY FILM SOUGHT BY A.D.A.

The photographic standards board of the American Standards Association has approved the initiation of a new standardization project for dental x-ray film. The project was proposed by a general conference of dentists, manufacturers of dental equipment and x-ray film, and government officials.

George Paffenbarger, senior research associate at the American Dental Association's Research Division at the National Bureau of Standards, spoke for the Association at the conference. He said there was a growing concern among dentists and the general public about x-ray exposure and that the Association was anxious to obtain uniform specifications for film speeds, nomenclature, sizes, and

other properties of dental x-ray film. One objective is to minimize the required exposure.

The Association has agreed to serve as administrative sponsor of the work. The standardization work will be carried on under the sectional committee procedures of the American Standards Association. One of the basic conditions of these procedures provides that all national groups and organizations with a substantial interest in the subject matter be given a chance to be represented on the committee. When the committee has formulated an acceptable standard, this then will be submitted by the ADA to the American Standards Association for approval as an American Standard.

MEMBERS REMINDED THAT MARCH 31 IS DUES DEADLINE

Any dentist who is not a member in good standing of the American Dental Association on March 31 will have received his last issue of THE JOURNAL with this issue, until he is reinstated with payment of his dues.

The reminder comes from the Council on Membership of the Association.

Legislation

DENTISTRY HAS STAKE IN ACTIONS OF 86TH CONGRESS

Activities of interest to the dental profession are taking place in the nation's Capitol now that the 86th Congress is in session.

The Senate has passed unanimously a resolution commending the achievements and contributions of the dental profession on the occasion of the A.D.A.'s centennial. Seventy-nine Senators joined with Senator Murray (Mont.) in co-sponsoring the resolution.

The House Committee on Ways and Means has approved and reported to the House, H.R. 10 (now known as the Keogh-Simpson Bill), the retirement savings plan for the self-employed. The House was expected to take up the bill for floor action during the week that THE JOURNAL went to press.

Early passage of the bill by the House will greatly enhance its chances for enactment by the present Congress. The bill was approved by the House during the waning days of the last session but adjournment prevented Senate action. The Association's Council on Legislation expects considerably more difficulty in obtaining Senate passage as some influential members of the Senate Finance Committee have indicated opposition to the plan.

The House Appropriations Subcommittee, headed by Representative Fogarty (D., R.I.), has commenced hearings on appropriations to operate the Department of Health, Education, and Welfare during fiscal 1960.

Association witnesses are scheduled to appear about mid-March to present recommendations on funds for the National Institute of Dental Research program and other dental activities of the Public Health Service. Those named by the Association were Floyd W. Pillars, Des Moines, vice-chairman of the Council on Legislation, and Raymond Nagle, a member of the Council on Dental Legislation. Dr. Nagle is also dean of New York University College of Dentistry and a member of the advisory research council of the National Institute of Dental Research.

FEDERAL DENTURE ACT ENFORCEMENT REPORTED

Mr. Robert A. Tieken, U. S. Attorney, has filed informations alleging violations of the Federal Denture Act in the State of Illinois against the operators of three Chicago mail order denture firms.

The defendants, arraigned on February

16, are: Lester B. Patterson (Clinical Dental Laboratories); Mary Clyde and Beldon Clyde (True-Grip Dental Laboratory), and Eli Sutker and Lester Sutker (All-State Dental Laboratory).

Each violation of the Federal Denture Act is punishable by a maximum of one year in prison or a $1,000 fine, or both.

PAMPHLETS AVAILABLE TO EXPLAIN KEOGH-SIMPSON BILL

The Council on Legislation urges all members of the Association to order copies of a pamphlet that explains the details of the Keogh-Simpson Bill, the retirement savings plan for the self-employed. These should be distributed to farmers, druggists, funeral directors and all other self-employed individuals.

The pamphlets may be ordered from the Council at the Central Office, 222 E. Superior St., Chicago 11, or from the American Thrift Assembly, 1025 Connecticut Ave. N. W., Washington 6, D. C.

The Council has a limited number of the pamphlets which will be distributed free on a first-come, first-served basis. When the supply is exhausted, dentists will have to order them from the American Thrift Assembly at an approximate cost of a penny apiece.

"DENTURIST" BILL DEFEATED IN GEORGIA COMMITTEE

On the evening of February 12, Robert Jordan, chairman of the legislative committee for the Georgia Dental Association, reported that the committee on hygiene and sanitation of the Georgia legislature, composed of 23 members, unanimously disapproved a "denturist" bill introduced last month. The bill would have permitted nondentists to make dentures for the public. This action, Dr. Jordan indicated, effectively kills the "denturist" bill for this season.

Action on a similar bill introduced in the Nevada legislature had not been reported to THE JOURNAL at press time. The Nevada State Dental Society, under the leadership of Raymond J. LaFond, Reno, is organizing opposition to the bill.

EXTENSION OF MILITARY DRAFT LAW APPROVED

In early February the House of Representatives passed a bill (H.R. 2260) to extend the authority to draft persons for military service. The bill also extends the authority to make special calls for dentists and physicians who are liable for service under the draft law.

The Council on Legislation of the Association expects that a bill to extend the special incentive pay for dental and medical officers of the Armed Forces and Public Health Service will be introduced in March.

Dental Societies

OKLAHOMANS SET UP $101,000 TRUST FOR DENTAL HEALTH

Oklahoma dentists, through their State Dental Association, have set up a $101,000 foundation to promote better dental health through a sweeping educational program in the Oklahoma schools.

The foundation also will finance research into the relationship between mental and dental health and studies of dental conditions in state institutions. The former subject is of particular interest to the National Institute of Dental Research and an application for a research grant probably will be submitted to it by the foundation.

The nonprofit organization, in formation for a year, will be known as the Oklahoma Foundation for Research and Education. Its initial project will be a conference of college health teachers in March at the University of Oklahoma.

The foundation's board of trustees

National Children's Dental Health Week got off to a good start in Indiana when Gov. Harold W. Handley emphasized the action already taken by President Eisenhower and signed a state-wide proclamation. Present at the ceremony were, left, E. A. W. Montgomery, Evansville, president of the Indiana State Dental Association, and Richard E. Jennings, Speedway City, chairman of the Children's Dental Health Week committee.

consists of nine dentists, headed by Victor C. Tisdal, Jr., of Elk City. Others are William E. Cole, William C. Hopkins and Robert C. Owen, Oklahoma City; Ralph L. Triplett, Mooreland; Charles M. Kouri, Chelsea; Noel Kaho, Claremore; Richard T. Oliver, Tulsa, and Harry N. Wagner, Henryetta.

Bert Castleberry, executive secretary of the Oklahoma State Dental Association, will operate the foundation until a permanent director is appointed.

BALTIMORE HOSPITAL OPENS DENTAL TREATMENT CENTER

The Dental Treatment Center for the Handicapped—one of the first in the nation—was dedicated at the Children's Hospital, Baltimore, February 9.

The dedication was part of the activities of the Baltimore Dental Society's observance of National Children's Dental Health Week and the centennial of the American Dental Association.

The center will serve children, as well as adults, and anyone is eligible if difficulties created by a handicap make it impossible or impractical to receive treatment in the usual manner in a private office.

Participating in the dedication ceremonies were Maryland Governor Millard Tawes; Robert Cooke, M.D., professor of pediatrics at Johns Hopkins Hospital; Frederick L. Wehr, president of the board of trustees of Children's Hospital; Dean Myron Aisenberg, University of Maryland Dental School; Eugene L. Pessagno, president of the Maryland State Dental Association, and Irving Abramson, president of the Baltimore Dental Society.

Dental Education

COLUMBIA TO HAVE ITS OWN FACULTY OF DENTISTRY

Gilbert P. Smith will be the first dean of the Faculty of Dentistry of Columbia University beginning July 1. Dr. Smith is associate dean of the School of Dental and Oral Surgery, Faculty of Medicine, at the university. Independent status of the dental unit will begin July 1.

The revision was announced in February by Dr. Grayson Kirk, president of Columbia, who said the action has been approved by the trustees.

In a congratulatory letter to Dr. Smith, Percy T. Phillips, president of the American Dental Association, said:

> By this latest action, Columbia University places the School of Dental and Oral Surgery under the direction of its own faculty and on an equal status with the other units of higher education in the university family. This strengthening of the position of the dental school should do much to stimulate the growth and development of dental science and research.

MOTT FOUNDATION FELLOWSHIP FOR TWO OPEN IN MICHIGAN

For those dentists who are licensed to practice in the United States and who can meet the entrance requirements of the School of Graduate Studies of the University of Michigan, two fellowships in graduate dentistry for children are made available by the Charles Stewart Mott Foundation of Flint, Mich.

Each fellowship provides for 17 months of formal graduate study at the W. K. Kellogg Foundation Institute of Graduate and Postgraduate Dentistry at the University of Michigan in Ann Arbor and for a year of clinical experience at the Mott Foundation's Children's Dental Clinic at Flint.

During the period at the university tuition is paid as well as a stipend of $150 a month. In the year of residence at the clinic, the stipend is $4,400. A program of research may be completed and reported in a thesis to qualify for the degree of master of science in dentistry for children.

Additional information on the fellowships and requirements for consideration may be obtained from Kenneth A. Easlick, professor of dentistry, School of Dentistry, University of Michigan in Ann Arbor. Fellows will be selected in April. The study program begins September 12.

RAYMOND NAGLE SUCCEEDS MAYNARD HINE ON COUNCIL

Percy T. Phillips, president of the American Dental Association, has appointed Raymond J. Nagle, dean of New York University College of Dentistry, as a member of the Council on Dental Education on the nomination of the American Association of Dental Schools.

Dr. Nagle succeeds Maynard K. Hine, who resigned on his election to the Board of Trustees. The appointment is for the ad interim term which will end with the Association's annual session in September, at which time the House of Delegates will elect a successor for the remainder of Dr. Hine's term which expires in 1960.

DENTAL SCHOOLS ASSOCIATION ESTABLISHED IN NEW OFFICES

Reginald H. Sullens, executive secretary of the American Association of Dental Schools, has announced that the new central office of the Association, and also the office of the Fund for Dental Education, are now being occupied. The offices are in the new American Hospital Association building at 840 North Lake Shore Drive, Chicago.

Mr. Sullens extends a cordial invitation to all members of the American Dental Association to visit the suite when they are in Chicago.

MICHAEL REESE INTERNSHIPS AVAILABLE TO START JULY 1

Michael Reese Hospital announces that it is now receiving applications for its 12-month dental rotating internships, starting July 1.

Those interested should write to: Dental Department, Michael Reese Hospital and Medical Center, 29th St. and Ellis Ave., Chicago 16.

The Michael Reese Hospital Department of Dentistry is approved by the Association's Councils on Dental Education and Hospital Dental Service.

Shailer Peterson, secretary of the Council on Dental Education of the Association, presented a report January 16 on "Dental Education" to staff, students and guests at the U. S. Naval Dental School, National Naval Medical Center. Appearing with Dr. Peterson in the picture are Captain E. G. F. Pollard, DC, USN, (left) Commanding Officer, and Captain George W. Ferguson, DC, USN, head of the officer education and training department.

SCHOOLS ANNOUNCE GRADUATE AND POSTGRADUATE COURSES

Alabama • The University of Alabama School of Dentistry will present three refresher courses during the month of May. On May 7 and 8 "Immediate root canal therapy followed by apicoectomy" will be conducted by Adeeb E. Thomas; "Pedodontics for the general practitioner" will be given by Sidney B. Finn on May 16 and 17, and "Anatomy of the head and neck" will be presented by Harry Sicher May 25-27.

Details can be obtained from: Director, Refresher Course Program, University of Alabama School of Dentistry, 1919 Seventh Ave. S., Birmingham, Ala.

California • Postgraduate Education, School of Dentistry, University of California, San Francisco, offers a course in the diagnosis and management of oral disease to be conducted by Joseph L. Bernier March 20 and 21.

The course will present a review of the fundamentals in general pathology and a detailed analysis of oral disease, local and general, with specific emphasis on mouth tumors. Tuition is $50.

Southern California • Three courses in May are scheduled at the University of Southern California School of Dentistry. They are: occlusion—functional development in wax, May 8-10; complete denture prosthesis, May 16, 17, 23 and June 6, 7; postgraduate seminar, May 18-22. Enrollment is limited in all classes. More information can be obtained from the postgraduate division of the school at 925 W. 34th St., Los Angeles 7.

Georgetown • A postgraduate course in intravenous anesthesia for the dental office will be given March 9-13 by Harold Krogh and Adrian O. Hubbell at the Georgetown University School of Dentistry in Washington, D. C. Enrollment is limited to 15 and the tuition is $250.

Illinois • The College of Dentistry at the University of Illinois is offering a one week postgraduate course in dentistry for children starting March 16. The faculty will include Maury Massler, Elsie Gerlach, Thomas K. Barber and David Torch. Registration is limited and the tuition is $100. Further information can be obtained from the school's division of postgraduate education at 808 S. Wood St., Chicago 12.

The College of Dentistry is now accepting applications for two and three year full time courses in oral surgery to begin in September. Both programs carry credit toward a Master of Science degree. Applications can be obtained from Dr. Daniel M. Laskin, department of oral and maxillofacial surgery.

Indiana • The following refresher courses are listed by the Indiana University School of Dentistry: crown and bridge construction, April 13-17; bridge construction (for laboratory technicians), July 27-30; partial denture design and construction, June 18, 25, July 2; partial denture design and construction, July 6-9. Information can be obtained from: Office of the Dean, Indiana University School of Dentistry, 1121 W. Michigan St., Indianapolis 2.

Kansas City • Three short postgraduate

courses will be available in April, May and June at the University of Kansas City School of Dentistry. They are: periodontics, April 1, 2, conducted by Frank Buebe; cephalometrics, May 6-8, given by R. M. Ricketts, and oral surgery, June 19, 20, by Robert B. Shira. Application should be made to the school at 1108 E. 10th St., Kansas City 6.

Massachusetts • The following courses have been scheduled by Boston University School of Medicine, department of stomatology: complete denture prosthesis, April 6-15; occlusal adjustments, April 27-May 1; endodontics, May 11-15; periodontal prosthesis, May 18-22; surgical technics employed in periodontal therapy, May 25-29; pulp protection in operative dentistry, June 4-6; periodontal pathology, June 8-12.

Details can be obtained from: Director of Postgraduate Studies, Department of Stomatology, Massachusetts Memorial Hospital, 750 Harrison Ave., Boston 18.

Michigan • During April, May and the first part of June, the following postgraduate courses will be offered at the W. K. Kellogg Foundation Institute, University of Michigan:

April 6, 7, control of apprehension and pain in dentistry for children—a course for the family dentist; April 6-17, operative dentistry; April 13-17, dental roentgenology; April 27-29, hydrocolloid and rubber base inlay technics; May 4-15, complete denture prosthesis; May 4-15, crown and bridge prosthesis; May 4-15, endodontics; May 4-15, minor oral surgery; May 11-13, amalgam restorations; May 14, 15, silicate restorations; May 18-29, dentistry for children; May 18-29, partial denture prosthesis; May 18-29, periodontics; June 1-5, dental practice administration.

Communications should be addressed to: Dr. William R. Mann, Associate Director, W. K. Kellogg Foundation Institute: Graduate and Postgraduate Dentistry, University of Michigan, Ann Arbor, Mich.

New York • "Developing effective practice" is the title of the management course to be given June 22-26 at the New York University College of Dentistry. Psychological tests to provide better understanding of himself and the reactions of patients will be administered to each participant. J. Lewis Blass and associates will instruct. The address of the school is 421 First Ave., New York 10.

Oregon • The following courses will be offered during May and June at the University of Oregon: May 11-13, anatomy of mandibular joint, Harry Sicher; May 18-22, complete mouth reconstruction, John C. Bartels; May 25-29, oral surgery, Robert Shira; June 8-12, silver amalgam, Miles Markley; June 14-19, dentistry for children, Charles A. Sweet; June 22-26, advanced pedodontics, I. Irwin Beechen and George Boone; June 29-July 1, prosthetics, Merrill G. Swenson.

Pennsylvania • The Thomas W. Evans Museum & Dental Institute of the University of Pennsylvania School of Dentistry at 4001 Spruce Street in Philadelphia will present the following courses:

March 16-18, extraoral tracers in rehabilitation of function, Ernest R. Granger; April 2, 3, pulp reactions to operative procedures, Samuel Seltzer, I. B. Bender and Louis I. Grossman; April 8-10, minor tooth movement and temporary stabilization, Leonard Hirschfeld; April 20-24, clinical occlusion, Arne G. Lauritzen; April 13, 14, endodontics, Louis I. Grossman; April 27-May 1, complete denture prosthesis, M. M. DeVan; May 4-8, newer concepts in oral rehabilitation, Charles B. Sceia.

Temple • An advanced course in complete denture prosthesis will be given by Bernard Jankelson and associates April 12-18 at the Temple University School of Dentistry. Enrollment is limited to 11 and the tuition is $375. Also, Edward J. Hoffman and Elmer J. Hoffman will present a course in transographics in complete mouth restoration May 4-9. The enrollment limit is ten and tuition is $225.

Further information can be obtained from the postgraduate division of the school at: Broad above Allegheny Ave., Philadelphia 40.

Tennessee • The University of Tennessee College of Dentistry announces six postgraduate courses to be given from March through June. They are: March 18-20, orthodontics for the general practitioner; March 23-25, endodontics; March 30-April 1, oral surgery; April 17, 18, complete denture prosthesis; May 25-27, operative dentistry; June 10-12, periodontology.

Details can be had by communicating with the school's postgraduate division at: 62 S. Dunlap St., Memphis.

Tufts • A one week refresher course in complete denture prosthesis will be given at Tufts University School of Dental Medicine under the direction of Irving R. Hardy and N. Jack Hansen. The dates are June 1-5 and the tuition is $150. Applications can be obtained by writing to: Division of Graduate and Postgraduate Studies, Tufts University School of

Dental Medicine, 136 Harrison Ave., Boston.

Washington • Courses offered from April to July at the School of Dentistry, University of Washington, Seattle, are listed as follows:

April 4, 5, cancer of the oral region; April 23-25, roentgenology for the general practitioner; April 30-May 1, 2, removable partial denture prosthesis; May 22, 23, diagnosis and treatment planning for complex restorative procedures; June 1-12, exodontia and minor oral surgery; June 29-July 3, practical cephalometrics and its use in the diagnostic procedure of orthodontics.

Inquiries should be sent to: Director of Postgraduate Dental Education, University of Washington, School of Dentistry, Seattle 5, Wash.

Charles Heston Patton, Philadelphia, receives the University of Pennsylvania General Alumni Society Award of Merit. The award was given January 17 by Mr. Windsor F. Cousins (left), president of the General Alumni Society. Dr. Patton was cited for his administrative ability and humanitarian service. He is Trustee for the Third District, American Dental Association; past president of the Philadelphia County Dental Society and the Pennsylvania Dental Association, and director of the Clinic for Cleft Palate Therapy at the dental school of the university.

General

FLEMMING REGRETS BLOCKING OF FLUORIDATION IN AREAS

Arthur S. Flemming, Secretary of Health, Education, and Welfare, has called for a "militant majority" to prevail over the "militant minority" blocking water fluoridation in many cities.

Secretary Flemming said it was "nothing short of tragic" that millions of children were thus being denied a convenient and safe way of preventing 65 per cent of dental decay.

The entire text of the Secretary's statement will be published in the April issue of THE JOURNAL in the report from the Bureau of Public Information.

SURVEY OF DENTISTRY SEEKS INFORMATION ON STUDIES

Dental societies, health departments, schools of public health and foundations are requested to advise the Survey of Dentistry of the nature of any studies that are currently in progress or are contemplated within the next few months.

The purpose of the request, according to Byron S. Hollinshead, LL.D., director of the Survey, is the avoidance of duplication in the planning and conduct of new studies. The address of the Survey is 700 N. Michigan Ave., Chicago 11.

PILOT STUDIES OF DENTAL HEALTH IN 2 AREAS PLANNED

Two pilot studies of dental health and the role of dentists in the forthcoming National Health Survey were discussed by survey officials at a conference with American Dental Association representatives in January. The conference was held in the Central Office. The survey is being undertaken by the U. S. Public Health Service.

The pilot studies are scheduled for this month in Fort Wayne, Ind., and in Howard County, Iowa, in April; conferences have been held with the dental societies in those areas. The purpose of the examinations is to obtain comparable data from all parts of the country; no specific treatment will be recommended. Findings will not be disclosed to the

Certificates of honorary membership were awarded to Rudolph H. Friedrich and Saul Levy for their contributions in the field of the handicapped patient. These were presented at the meeting of the Academy of Dentistry for the Handicapped, held in conjunction with the Chicago Midwinter Meeting, February 8, at the Conrad Hilton Hotel. Shown are (left to right): M. Michael Cohen, past president of the A.D.H.; Dr. Friedrich, secretary of the Council on Dental Health, A.D.A.; Dr. Levy, director of the dental department, Michael Reese Hospital, and Hugh M. Kopel, president of A.D.H.

examinee, but if he desires, a report will be forwarded to his dentist.

Survey officials at the conference were: O. K. Sagen, Ph.D., chief of special studies; Alice M. Waterhouse, M.D., medical advisor, and James Kelly, dental representative, all of the Public Health Service, Washington, D. C.

HOSPITAL SERVICE INSTITUTE LISTS SPEAKERS, SUBJECTS

Who is responsible for patient care in hospitals is one of the questions that will be discussed at the Institute on Hospital Dental Service to be held May 18-21 in San Francisco. Mr. Kenneth E. Knapp, administrator of the Thomas Dee Hospital, Ogden, Utah, will be the speaker on this subject.

Among the other speakers listed by the Council on Hospital Dental Service of the Association are: O. J. McCormack, chairman of the Council; Gerard Casey, Council secretary; B. C. Kingsbury, Jr., Lyall O. Bishop, Sanford Moose and Paul Hamilton. Mr. Bernard J. Conway, secretary of the Association's Council on Legislation, Mr. James Ludlum, attorney for the California State Hospital Association, and Mr. Anthony Kennedy, attorney for the California State Dental Association, will speak on the interpretation of dental practice acts.

On the last day of the conference a visit will be made to the U. S. Public Health Service Hospital in San Francisco.

NEW OFFICERS NAMED TO A.A.A.S. SECTION ON DENTISTRY

At the Council meeting of the American Association for the Advancement of Science the following elections are of dental interest:

Elected by the section committee of

A portrait of Frank J. Houghton, dean of the School of Dentistry, Loyola University, New Orleans, was presented by Robert F. Eastman, professor of operative dentistry and president-elect of the Loyola chapter of Omicron Kappa Upsilon, national honor dental fraternity. Shown accepting the portrait (right) is the Very Rev. Patrick Donnelly, S.J., university president. The presentation to the school was made at a chapter meeting held at the university.

Section Nd (dentistry): member-at-large, Gerald J. Cox, Ph.D., University of Pittsburgh; section secretary, Reidar F. Sognnaes, Harvard University, and vice-president and chairman, Maynard K. Hine, Indiana University.

H. Trendley Dean, secretary of the Council on Dental Research of the American Dental Association, was elected to the committee on nominations of the A.A.A.S. Council.

TEN U. S. DENTISTS LECTURE AT SANTO DOMINGO SCHOOL

During the week of January 11, ten dentists of the United States presented a lecture course of four lectures per day to the dentists of the Dominican Republic and senior and junior dental students. The lectures were given at and under the auspices of the Santo Domingo University School of Dentistry.

The following is a report by Obed H. Moen, Watertown, Wis., chairman of the A.D.A. Council on International Relations, and one of the visiting lecturers:

The dental school was closed and no classes were held during the week of the lectures thereby making possible attendance of the faculty at the meetings.

About 25 to 30 dentists graduate from the school each year. The school equipment is modern and every facility is provided for the students. The curriculum calls for a five-year dental course and produces a large number of fine dentists. They expressed appreciation to Shailer Peterson, secretary of the Council on Education of the A.D.A., for his assistance in developing the curriculum about two years ago.

All of the American dentists including their wives expressed a hope that someday they might again return on a similar mission. The detailed attention given to each visitor resulted in this very favorable response. The organizing power of Fernando Camino Celeste, dean of the dental school, was reflected throughout the whole program.

In addition to Dr. Moen, the following presented the program: Charles C. Ber-

THE WHITE HOUSE

NATIONAL CHILDREN'S DENTAL HEALTH WEEK, 1959

BY THE PRESIDENT OF THE UNITED STATES OF AMERICA
A PROCLAMATION

WHEREAS the dental health of our children is a basic part of their general well-being; and

WHEREAS dental diseases are among the most widespread of the ailments of childhood, and dental neglect can cause suffering and disability in later years; and

WHEREAS our dental profession is observing in 1959 the one hundredth anniversary of its organization and is reemphasizing the importance of preventing dental disease; and

WHEREAS a joint resolution of the Congress, approved on August 28, 1958 (72 Stat. 986), authorized the President to issue a proclamation setting aside the period from February 8 to 14, 1959, as National Children's Dental Health Week:

NOW, THEREFORE, I, DWIGHT D. EISENHOWER, President of the United States of America, do hereby proclaim the week beginning February 8 and ending February 14, 1959, as National Children's Dental Health Week; and I request the appropriate agencies of the Federal Government to participate fully in the observance of that week. I also invite State and local governments and organizations interested in child welfare to unite during that week in such activities as will call to the attention of the people of the United States the necessity of a continuous program for the protection of the dental health of the Nation's children.

IN WITNESS WHEREOF, I have hereunto set my hand and caused the Seal of the United States of America to be affixed.

DONE at the City of Washington this fourth day of February in the year of our Lord nineteen hundred and fifty-nine, and of the Independence of the United States of America the one hundred and eighty-third.

DWIGHT D. EISENHOWER

By the President:
CHRISTIAN A. HERTER
Acting Secretary of State

ger, New York, organizer and director of the program; James Courtney, Cleveland, Ohio; Ira E. Klein, New York; E. Alan Lieban, New York; Harry M. Seldin, New York; Harry Sicher, Chicago; Harry Weiss, New York, and Irving Yudkoff, New York.

PROMINENT EDUCATORS TO ADDRESS HEALTH CONFERENCE

Two nationally known health educators will headline the section on dental health education at the 10th National Dental Health Conference April 27-29 it was announced by Mr. Perry J. Sandell, director of the Bureau of Dental Health Education. The Bureau is arranging a section of the conference program for the Council on Dental Health which sponsors the conference annually at Association headquarters in Chicago.

Del Oberteuffer, Ph.D., professor of health and physical education at Ohio State University, will speak on the subject, "An educator looks at dental health education in the school program." Leonard J. Dolton, Ed.D., dental health education

co-ordinator for the Los Angeles County Dental Society, will discuss, "A county dental society's experience with dental health education programs in elementary and secondary schools."

Dentist members of state boards of health are particularly urged to attend this conference, according to Dr. Eshleman, "because of the need for an exchange of information on dental programs between state health departments at the policy level."

HONOLULU COUNTY SOCIETY FAVORS HAWAIIAN STATEHOOD

At the regular monthly meeting of the Honolulu County Dental Society January 21, a resolution was introduced and passed that the society go on record as favoring statehood for Hawaii.

Notice of the resolution was sent to Percy T. Phillips, American Dental Association president, by Clarence T. Lee, president of the Honolulu County Dental Society.

GROUP DENTAL INSURANCE PLAN REFUNDS SOME PREMIUMS

Earned premiums of $1,055.70 were returned last month to 54 subscribers of Group Health Dental Insurance, New York City, who in 1958 paid premiums at a family rate but had no children over two years old.

No premiums will be charged in the future until a child reaches his second birthday, but children will receive benefits for any dental services provided for in the contracts of the parents, GHDI announced.

Winslow Carlton, GHDI board chairman, said that the Plan encourages parents to start children at age two on a program of dental care. By this age approximately 50 per cent have one or more carious teeth; the problem increases as the children grow older.

"We can absorb the cost of caring for the rare cases where dental services become necessary before age two," Mr. Carlton said, "and we are especially eager to enroll as many children as possible before their sixth birthday, because such children are eligible for orthodontic benefits at a later date."

RUTH MARTIN, AUTHORITY ON CHILD DENTISTRY, RETIRES

Ruth E. Martin, one of the nation's leading authorities on dentistry for children, has retired. Dr. Martin was professor and head of the department of dental pediatrics at the School of Dentistry, Washington University, St. Louis.

Ruth E. Martin . . . retires to California

Dr. Martin also has been assistant professor of pediatric dentistry at the University's School of Medicine for many years, dentist in the department of pediatrics at St. Louis Hospital and member of the consulting staffs of Barnes, Homer G. Phillips and City Hospitals in St. Louis.

She was one of the first women to be admitted to the American College of Dentists and is a charter member of the American Board of Pedodontics. In 1947 she was one of the St. Louis "Women of Achievement."

Dr. Martin, who has been named professor emeritus of dental pediatrics at Washington University, currently is living at 126 West Calle Crespis Ave., Santa Barbara, Calif.

ARTHUR LUFKIN, AUTHOR OF DENTAL HISTORY, DIES

Arthur W. Lufkin, 69, died January 15 in Hollywood, Calif. Dr. Lufkin was a past member of the faculty and professor of periodontology at the University of Southern California and former editor of the Southern California State Dental Association Journal. He was the author of a text book entitled "A History of Dentistry."

Dr. Lufkin was one of the founders of the Western Society of Periodontology and a diplomate of the American Board of Periodontology. He was a member of the American Dental Association and an honorary member of the Australian Dental Association.

TWO ILLINOIS UNIVERSITY ALUMNI LAUNCH ENDOWMENT

A permanent endowment, to be known as the Edward C. Wach Dental Research Fund, has been established at the University of Illinois College of Dentistry.

Dean Isaac Schour announced the fund has been launched by initial contributions of $10,000 and $5,000, respectively, from Robert G. Kesel and Edward C. Wach.

Dr. Wach, an alumnus, became an emeritus staff member of the college in 1953 when he retired from an associate professorship in materia medica and therapeutics.

Dr. Kesel, also an alumnus, is professor and head of the department of applied materia medica and therapeutics. He is on leave of absence as staff member in charge of dental research and professional practice for the Commission on Survey of Dentistry, Chicago.

The two scientists collaborated in research and development of an ammoniated dentifrice that has made national news since 1949. It was patented and licensed to manufacturers by the University of Illinois Foundation.

Both anticipate a substantial growth of the fund through contributions from other alumni.

MANUFACTURERS THORNTON, KERR NAMED TO FUND BOARD

The election of Robert Kerr, Jr., president of the Kerr Manufacturing Company of Detroit, and Henry M. Thornton, president of the Dentists' Supply Company of New York, to the board of directors of the Fund for Dental Education, has been announced by the Fund's president, Maynard K. Hine, Indianapolis.

The selection of Mr. Kerr and Mr. Thornton was made on the basis of their outstanding service to the dental profession and particularly because of their interest in dental education. As directors they attended the midwinter meeting of the Fund board last month in Chicago.

BOSTON DENTIST, CRIPPLED BY POLIO, HAS MAGAZINE SERVICE

A Boston dentist, confined to a wheel chair because of poliomyelitis, runs a professional subscription service for periodicals. Louis W. Soldan, stricken with the crippling disease about nine years ago while engaged in the practice of dentistry, manages his subscription service from his home at 135 Edgewater Drive, Framingham, Mass.

Dr. Soldan says that the lowest rates available may be obtained through his service. He also maintains a reminder service for renewals.

RITTER AND WILMOT CASTLE COMPANIES TO CONSOLIDATE

A merger agreement has been reached by the Ritter Company and Wilmot Castle Company, both of Rochester, N. Y., major producers of professional operating equipment for dentists, physicians, surgeons and hospitals as well as production equipment for the pharmaceutical and allied industries.

According to the plan, which has been approved by the boards of directors of both companies, the Castle Company will become a subsidiary of the Ritter Company. This action will probably take place next month. F. Ritter Shumway is president of the Ritter Company and Wilmot V. Castle of the Castle Company.

Meanwhile some personnel changes have been announced by the Castle Company. David Bellamy, vice-president in charge of the medical-dental division, has retired after 36 years of service with the firm. He will be succeeded by John K. Hoag, sales manager of the medical-dental division. Joseph T. Lee has been appointed assistant sales manager.

GEORGIA BOARD SETS NEW DATE FOR EXAMINATIONS

The Georgia Board of Dental Examiners announces that there has been a change in the dates on which the dental and oral hygiene examinations will be held.

The new dates are June 1-4. The schedule specifies that all applicants for licensure in oral hygiene and dentistry are to report to the State Capitol Building in Atlanta at 8 A.M. Monday, June 1.

RETIRED DENTIST PLANS TO LIST BOOKS BY DENTISTS

A listing of all the books authored by dentists which are not concerned with dentistry is the aim of Milton J. Waas, Haddonfield, N. J., who has started his compilation of such a list.

Dr. Waas, a retired dentist who was also a public health dentist, is the author of a book entitled "*As It Waas,*" which was reviewed in the August 1958 issue of THE JOURNAL. He is currently completing a novel which will be titled "*Not As It Should Be.*"

Readers are invited to send references to all such books to Dr. Waas at The Black House, 427 Hopkins Lane, Haddonfield, N. J.

JOHN KNUTSON, PUBLIC HEALTH SERVICE, WINS AWARD MEDAL

John Knutson, Assistant Surgeon General and chief dental officer of the U. S. Public Health Service, was presented the Alumni Research Award Medal for 1959 by the Columbia University School of Dental and Oral Surgery.

The award was made at the Columbia dental school's annual Dean's Day February 13. After the presentation Dr. Knutson delivered a paper on "Research and Innovation in Dentistry."

Dr. Knutson has been actively engaged in dental research for over 20 years, studying the characteristics of tooth decay and its control. He was active in the pioneer work which resulted in fluoridation programs throughout the country.

ANOTHER MASSACHUSETTS TOWN INSTALLS FLUORIDATION

On January 12 the town of Lynnfield Center, Mass., population 3,600, began the fluoridation of its water supply, using sodium fluoride. The action was the result of a referendum which was held in April 1958.

the reader comments

THE JOURNAL *devotes this section to comment by readers on topics of current interest to dentistry. The editor reserves the right to edit all communications to fit available space and requires that all letters be signed. At the request of the author, signatures will be deleted before publication. Printed communications do not necessarily reflect the opinion or official policy of the Association. Your participation in this section is invited.* *The Editor*

INDIAN DENTIFRICE

From time immemorial "Babul Datan" has been used as a dentifrice in India. It is a twig from the babul tree. In an ancient medical book titled "Charak" it is described as follows:

"Datan should be a fresh twig or small branch from the babul tree, about nine inches long and as thick as a person's little finger. It is a most hygienic toothbrush as it is used only once and then thrown away. Chewing it for half an hour releases an astringent juice which is beneficial to the gums. This chewing also softens the end of the stick so that it may be used as a brush. Lengthy chewing is also good exercise for the teeth and gums.

"Afterwards the mouth should be cleaned thoroughly with water so that no trace of the juice remains on the surfaces of the teeth. If allowed to remain on the teeth, thin layers of the juice form a tartar-like substance, light yellow in color."

In the Indian villages about 90 per cent of the people use "Datan" whereas in the cities about 30 per cent of the people use it. Where the babul tree is not available, people use twigs from the "Limdo" and other trees.

I have come across many people who have used "Datan" to clean their teeth who have had a complete set of strong, healthy teeth at the age of 75 or 80.

The next dentifrice in preference among villagers is the burnt ash of tobacco which they believe prevents pyorrhea and other dental diseases. The majority of persons I have seen who use tobacco ash have a better oral condition than those using modern dentifrices. However, there are other factors to be considered with this condition. Their food is hard and usually raw, whereas the diet of those using modern dentifrices is more apt to be soft. Much could be learned from research in this field.

Many people in India also use salt for cleaning their teeth and it has been found that they are relatively free from dental caries because of the fluorine content of both rock salt and crude sea salt.

Jal F. M. Lafa, L.D.Sc.
Bhagatalav Main Road
Surat, India

MORE ON RETIREMENT

I am heartily in favor of the ideas expressed by Dr. Henry Reiseman on page 112 of the January issue of THE JOURNAL.

I am 66 years old and have 43 years of dentistry under my belt. I must admit that I am fed up with dentistry right now, even though I am at the office only four or five hours a day.

Would a questionnaire—formulated by American Dental Association experts in the retirement field—sent to men of our age group help us to determine the most suitable field in which to work after retirement?

I am sure a committee appointed by the Association in conjunction with some life insurance agency or similar organization could compile such a series of questions.

Henry Newton Novy, D.D.S.
7857 S. Halsted St., Chicago 20, Ill.

cases and comments

REMOVAL OF STYLET INJECTED INTO SOFT TISSUE DURING BLOCK ANESTHESIA

By Leonard L. Mc Evoy, D.D.S., Hollywood, Calif.

The patient, a 52 year old man, was referred by his dentist in September 1953. The dentist reported that he had left the stylet in a needle used for a mandibular injection and it had been forced into the tissue during an injection. The patient said that the dentist had not been aware of what had happened and that he, the patient, felt the sharp end of the wire projecting into his mouth. The patient, using his fingers, had pulled the wire out and brought it to the attention of the dentist when the dentist had returned to the room. The dentist then compared the length of the wire to another similar one and decided that about 1 cm. of stylet was broken off in the tissues.

Roentgenographic examination revealed that a section between 8 and 10 mm. in length remained in the tissue lingual to the ramus of the mandible. Large lateral jaw plates did not disclose the fragment satisfactorily and dental films were employed. The picture at the left shows the fragment encircled with a half round needle. It was apparently in the body of the internal pterygoid muscle or perhaps between it and the superior constrictor of the pharynx.

Operative Procedure • A vertical incision was made through the oral mucosa about 3 cm. in length and about 1 cm. posterior to the anterior border of the ramus. Blunt dissection was used thereafter. The internal pterygoid muscle and lingual nerve were identified. After a 30-minute unsuccessful search for the article, additional local anesthetic was used and additional roentgenograms taken. The object was apparently in the same relative location. After continuing the search the wire was found in the substance of the internal pterygoid muscle. It was compared for length and found satisfactory and roentgenograms taken of the region to insure that no other fragment was present. (Illustration, right). The wound was closed with silk sutures.

Recovery was uneventful and the sutures were removed the fourth day.

At left the half round suture needle may be seen almost encircling the stylet (tiny white dot). At right removal has been demonstrated.

Comment • Roentgenograms and radiopaque pathfinders are only of relative help in locating a foreign body of this character because of the motility of the soft tissues. The danger of legal action is always present in instances of this kind and the patient should be dealt with very carefully to prevent malpractice suits. I had the patient return daily for ten days and by using persuasion each time encouraged him to forget his injury and his idea of instigating legal action.

6381 Hollywood Boulevard

THE POSTERIOR VENEER CROWN WITH GOLD CUSPS

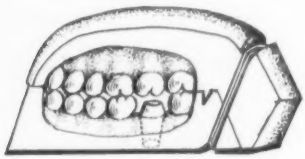
By A. H. Tamarin, D.D.S., Chicago

The posterior veneer crown with gold cusps, because of its sturdy construction in addition to its esthetic qualities, is particularly well adapted for use on posterior teeth in mouth reconstruction or in instances when the vertical dimension is increased. The occlusal surface, the lingual surface and two thirds of the mesial and distal surface are of cast gold. The buccal surface and one third of the mesial and distal surfaces are veneered with acrylic resin. The acrylic resin is anchored to these surfaces by small horizontal metallic bands which extend from the mesial surface across the buccal surface to the distal surface. The bands, which may be plain or perforated, are attached to a central point in the buccal surface of the crown.

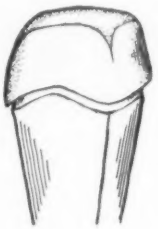
TECHNIC

1. The tooth is prepared in the usual manner for a shell crown except that the mesial, distal and buccal surfaces are relieved a full millimeter or more.

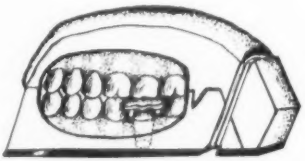
2. Impressions are taken of the upper and lower quadrants and the casts mounted on an articulator with a stone model of the prepared tooth in position.



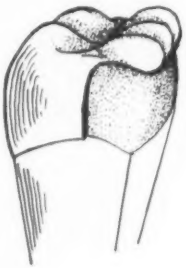
3. A wax coping is obtained by dipping the crown of the wet tooth model into a dish of molten wax and withdrawing it instantly. The tooth model with its wax coping is replaced in position in the articulator.



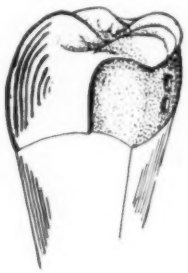
4. A piece of soft baseplate wax is placed on the occlusal surface of the wax coping and pressed into position by the opposing teeth. It is trimmed to an appropriate size and when carved to full cusp form it will overhang the buccal surface of the tooth about 0.5 mm.



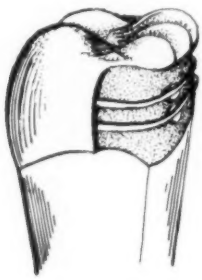
5. The stone model is removed from the articulator and the lingual surface and two thirds of the mesial and distal surfaces are waxed up to conform to the natural shape of the tooth and the contact points with adjacent teeth established. When this waxing up operation is completed there will remain an unwaxed area approximately 0.5 mm. in depth on the buccal surface and on the buccal third of the mesial and dental surfaces.



6. One or two nodules of wax 0.5 mm. in height are placed at the center of the buccal surface of the wax coping. The rest of the buccal area of the wax coping is then filled in with investment compound to a thickness of 0.5 mm.



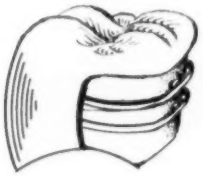
7. One or two strips of 30 gauge Kerr blue-sheet wax 1 to 1.5 mm. wide are laid horizontally from the mesial surface across the buccal surface to the distal surface passing over the small wax nodules in the center of the buccal surface. The ends of these wax strips are attached to the mesial and distal waxed surfaces and the midpoints of the strips are attached to the small buccal nodules.



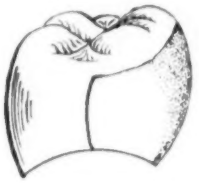
8. A compound sprue is attached to the crown which is invested and cast in the usual manner.

9. The sprue is removed and the crown cleaned and polished.

10. The exposed buccal surface of the crown including the bands is covered with opaque material.

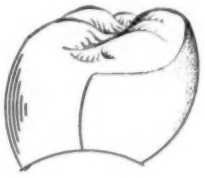


11. Self-curing acrylic resin is inserted into the buccal area and packed in behind the horizontal metal strips which anchor the plastic in place. The acrylic material is contoured to shape, allowed to set, polished and finished, or the entire buccal surface is molded in wax, invested and processed.



12. The finished product—ideal both functionally and esthetically.

25 East Washington Boulevard



reports of councils and bureaus

The freshman dental student

COUNCIL ON DENTAL EDUCATION

The nation's one hundred and eighteenth freshman dental class is now enrolled in the 47 dental schools. The current class consists of 3,607 students (3,584 men and 23 women), most of whom will be graduated as dentists in 1962 to join the ranks of the profession.

The Council on Dental Education is vitally interested in these young students, in their prior training, their selection, and in the dental education they will receive. A brief description of the current freshman class is being presented with the thought that the JOURNAL readers might be interested in knowing something about these young men and women who will represent dentistry in the future, where they come from, where they go to dental school, and something of their background.

As would be expected, more dental students are from New York than from any other state. The students from California rank next in numbers, with Pennsylvania, Ohio, Michigan, Texas and Illinois all contributing significantly to the freshman dental population. Interestingly, almost half of the current first year students come from these seven states, and, as indicated in Table 1, the number of students from California and Texas have been steadily increasing whereas the number of students from Illinois has tended to decrease.

Table 2 indicates where the students of these recent classes have attended dental school. As may be noted, more of the freshman dental students are enrolled in Pennsylvania schools than in the schools of any other state. California ranks second, New York third, with Illinois, Ohio, Missouri, and Texas making up the first seven states in terms of numbers of freshman dental students enrolled within a state. Again, this pattern has been relatively constant for the past eight years.

The average age of the freshman student is almost 24 (Table 3). More students are of age 21 than of any other single age group. The youngest students, and there are only two at this age level, are 18 years old; the oldest student is 44. Only 24 members out of this class are over 35. The average age and the distribution of ages have changed very little in recent years.

Table 1 • Freshman dental classes

Residence	1951	1952	1953	1954	1955	1956	1957	1958
Alabama	51	45	49	49	62	60	64	50
Alaska	1	1	0	*	*	*	*	3
Arizona	8	16	25	21	16	21	28	33
Arkansas	19	20	35	45	44	36	30	33
California	225	231	246	274	287	299	306	353
Colorado	25	23	26	23	20	31	29	35
Connecticut	63	50	46	48	59	45	52	48
Delaware	6	9	3	7	14	4	7	11
District of Columbia	26	27	23	25	24	23	22	25
Florida	63	50	63	71	56	59	66	90
Georgia	41	34	35	30	42	40	49	49
Idaho	18	22	25	32	26	28	27	37
Illinois	183	170	167	170	183	176	183	160
Indiana	75	71	69	70	75	74	79	77
Iowa	62	53	56	54	62	67	66	63
Kansas	30	29	32	31	34	44	45	48
Kentucky	50	56	39	55	45	47	47	53
Louisiana	38	40	32	45	42	37	54	35
Maine	8	10	11	13	13	12	14	6
Maryland	38	39	34	40	40	38	44	56
Massachusetts	78	98	113	94	97	108	120	129
Michigan	152	186	168	170	173	183	191	178
Minnesota	83	73	81	80	79	95	93	85
Mississippi	21	31	29	38	27	37	26	35
Missouri	64	48	58	50	49	55	54	32
Montana	16	13	22	20	32	23	21	23
Nebraska	30	34	37	27	37	30	28	36
Nevada	2	5	7	5	4	4	5	3
New Hampshire	10	13	9	15	13	12	12	8
New Jersey	94	112	105	119	105	130	132	141
New Mexico	6	7	4	6	13	12	7	7
New York	268	372	390	372	410	420	374	377
North Carolina	57	55	86	54	65	68	68	66
North Dakota	7	9	12	10	9	6	8	17
Ohio	182	186	159	175	190	182	195	198
Oklahoma	42	31	53	48	44	39	41	49
Oregon	39	54	57	64	63	68	77	70
Pennsylvania	200	205	209	197	202	231	228	205
Rhode Island	14	17	10	12	13	13	14	8
South Carolina	11	25	19	32	33	40	32	45
South Dakota	7	14	17	15	13	6	15	13
Tennessee	65	130	81	87	92	68	70	72
Texas	103	123	126	121	152	164	163	174
Utah	52	54	48	81	61	68	41	53
Vermont	9	2	8	4	5	4	8	4
Virginia	59	63	56	63	67	70	66	56
Washington	71	71	75	77	78	82	79	73
West Virginia	33	23	32	24	27	35	47	38
Wisconsin	97	77	73	72	78	88	73	56
Wyoming	8	10	10	17	8	11	12	8
Hawaii	24	36	24	*	*	*	*	*
Puerto Rico	4	7	14	*	*	*	*	31
Other U.S. Possessions	0	0	0	61	43	41	56	24
Canada	9	9	10	7	10	13	13	8
Other Countries	9	18	8	9	9	14	19	19
Unknown	304	37	48	0	0	0	0	0
Total	3,260	3,244	3,274	3,329	3,445	3,561	3,600	3,607

*Included in other U. S. possessions.

Table 2 • Freshman dental classes

State	Dental school	1951	1952	1953	1954	1955	1956	1957	1958
Alabama	University of Alabama	51	51	52	52	52	52	53	53
California	College of Physicians and Surgeons	54	54	54	54	55	60	60	60
	University of California	60	60	60	71	76	74	75	74
	University of Southern California	106	105	105	105	104	105	105	105
	College of Medical Evangelists	—	—	42	47	50	51	60	61
District of Columbia	Georgetown University	104	96	99	99	110	115	81	88
	Howard University	50	52	50	51	52	52	72	82
Georgia	Emory University	80	82	80	80	83	84	84	83
Illinois	Loyola University	90	94	93	95	90	88	92	99
	Northwestern University	109	101	93	93	87	89	89	81
	University of Illinois	80	80	70	71	80	91	91	90
Indiana	Indiana University	69	70	65	65	69	69	72	81
Iowa	State University of Iowa	55	55	54	54	55	55	55	55
Kentucky	University of Louisville	62	62	58	62	62	59	62	64
Louisiana	Loyola University	52	53	54	54	54	54	56	56
Maryland	University of Maryland	110	110	110	109	110	109	101	103
Massachusetts	Harvard School of Dental Medicine	16	12	15	14	16	14	16	16
	Tufts University	91	91	91	98	99	100	101	103
Michigan	University of Detroit	72	72	72	74	72	73	78	79
	University of Michigan	97	96	95	96	96	95	95	95
Minnesota	University of Minnesota	103	97	101	101	103	107	108	103
Missouri	St. Louis University	76	80	83	78	76	80	57	33
	University of Kansas City	108	105	112	115	122	119	114	115
	Washington University	52	52	50	52	52	52	52	51
Nebraska	Creighton University	46	46	46	46	46	46	46	46
	University of Nebraska	32	32	33	32	33	34	34	34
New Jersey	Fairleigh Dickinson University	—	—	—	—	—	46	48	48
	Seton Hall University	—	—	—	—	—	38	44	43
New York	Columbia University	40	41	40	42	40	40	40	40
	New York University	150	150	150	150	170	170	168	170
	University of Buffalo	64	66	63	61	68	68	64	61
North Carolina	University of North Carolina	40	44	50	50	50	50	50	50
Ohio	Ohio State University	120	119	120	120	120	120	128	138
	Western Reserve University	60	60	60	59	60	69	62	62
Oregon	University of Oregon	80	77	75	77	80	80	80	79
Pennsylvania	Temple University	132	130	129	132	132	131	131	130
	University of Pennsylvania	139	138	139	138	140	137	141	138
	University of Pittsburgh	96	96	96	96	96	96	96	96
Tennessee	Meharry Medical College	36	35	26	36	36	36	35	27
	University of Tennessee	114	108	104	108	110	101	101	107
Texas	Baylor University	60	64	80	84	84	84	84	85
	University of Texas	62	67	61	60	90	100	100	100
Virginia	Medical College of Virginia	53	53	54	55	75	78	80	80
Washington	University of Washington	75	74	76	78	75	75	65	64
West Virginia	West Virginia University	—	—	—	—	—	—	30	33
Wisconsin	Marquette University	114	114	114	115	115	115	115	115
Puerto Rico	University of Puerto Rico	—	—	—	—	—	—	29	31
Total		3,260	3,244	3,274	3,329	3,445	3,561	3,600	3,607

The number of students married prior to enrollment in dental school seems to be increasing (Table 4). Before World War II, the presence of married students in dental school was not too prevalent; however, the increase in the number of married students attending school has been experienced in all branches of higher education.

Over one third of the first year students

had completed their military obligation prior to enrollment in dental school (Table 5). The percentage of students with veteran status has varied, but seems to have leveled off at about 35 per cent.

Three fourths of the current first year dental students had more than two years of predental college study, the minimum prescribed by the Council on Dental Education (Table 6). About 30 per cent had a bachelor's or master's degree prior to enrollment in dental school and another 10 per cent will have earned a baccalaureate degree by the time the dental degree is awarded. The number of freshman dental students with bachelor's degrees is not presently as great as it was in 1951, when record numbers of students were applying for admission. With the increase in the cost of a dental education in recent years and, with the increase in the cost of education in general, it may be that in the future even fewer prospective dental students will find it feasible to earn a baccalaureate degree before beginning dental study.

As indicated previously, 23 students or 0.6 per cent of the present first year class are women (Table 7). The percentage of women students in the current class is larger than it was in 1951, but otherwise there has been little change in the numbers of women students in the last eight freshman classes. Similarly, there has been little change in the numbers of women applicants, and, interestingly, the percentage of women students continues to approximate the percentage of women dentists in practice.

These are some vital statistics of our present dental freshmen, the men and women who will be helping to care for the dental needs of the population in the future. The dentists of today can be proud of the students being attracted to the profession and can feel confident in having these individuals, after they have completed the sound educational program offered by the dental schools, join the profession and help maintain the standards of proper dental care.

The pride in the caliber of students is not to be confused with complacency. The Council recognizes, as do other segments of dentistry, the need for recruit-

Table 3 • Freshman dental classes

Average age						
1951	1952	1953	1954	1955	1956	1957
23.2	23.1	22.6	23.8	23.4	23.5	23.6

Table 4 • Freshman dental classes

	1951	1952	1953	1954	1955	1956	1957
Single	2,559	2,579	2,649	2,540	2,618	2,649	2,603
Married	701	665	625	789	827	912	997
Total	3,260	3,244	3,274	3,329	3,445	3,561	3,609
Per cent married	21.5	20.5	19.1	22.8	24.0	25.6	27.7

Table 5 • Freshman dental classes

Percentage veterans						
1951	1952	1953	1954	1955	1956	1957
38.1	28.2	23.9	28.5	32.5	35.0	35.1

Table 6 • Freshman dental classes

Per cent with Baccalaureate degree prior to enrollment						
1951	1952	1953	1954	1955	1956	1957
44.8	36.1	34.4	35.8	36.2	34.5	30.4

Table 7 • Freshman dental classes

	1951	1952	1953	1954	1955	1956	1957
Men	3,250	3,225	3,251	3,312	3,417	3,578	3,585
Women	10	19	23	17	28	22	22
Total	3,260	3,244	3,274	3,329	3,445	3,600	3,607
Percentage women	0.3	0.6	0.7	0.5	0.8	0.6	0.6

ment if the reservoir of qualified applicants is to be maintained and expanded as the training facilities are increased. As the population grows, the need for additional dentists logically increases. Additional dentists can come only from the dental schools, and the dental schools, even with expanded facilities, can train additional personnel only if sufficient numbers of qualified young men and women are interested in the profession. The American Dental Association, the local societies, and other segments of the profession recognize this challenge and are taking positive action in acquainting potential applicants with the need for dental personnel and with the rewards offered by the profession.

American Dental Association Specification No. 13 for Self-curing Repair Resins (First revision, approved December 1958, effective January 1, 1959)

COUNCIL ON DENTAL RESEARCH

The following revision of Specification No. 13 was approved by the Council on Dental Research at its meeting in December 1958.

1. SCOPE AND CLASSIFICATION

1.1 Scope. This specification is for self-curing resins used primarily for repairing denture base resins.

1.2 Types and Classes. Repair resins covered by this specification shall be of the self-curing type, powder and liquid class, and shall be of two colors, pink and clear.

2. APPLICABLE SPECIFICATIONS

2.1 Specification. American Dental Association Specification No. 12 for Denture Base Resin (Acrylic Resins or Mixtures of Acrylic and other Resins), Second Revision, as it applies to Type II self-curing resins forms a part of this specification, with the exceptions noted below.

3. REQUIREMENTS

The repair resins shall conform to all requirements of American Dental Association Specification No. 12 applicable to Type II self-curing resins with the following three exceptions. Paragraph 3.3.1, paragraph 3.4.1 and paragraph 3.4.7 shall be changed to read:

3.3.1 (Plasticity Test) The plasticity test shall be conducted as described in paragraph 3.3.1 except that the test described in paragraph 4.3.1.2 shall be

The publication of this revision of Specification No. 13 was authorized by the National Bureau of Standards and the Council on Dental Research of the American Dental Association.

started at three minutes instead of five minutes.

3.4.1 Working Qualities. The self-curing repair resin shall yield a satisfactory repair when processed according to instructions furnished by the manufacturer.

3.4.7 Transverse Deflection. The deflection of at least three of the five specimens prepared as outlined in 4.3.5 shall meet the following requirements when tested in water at 37 ± 1°C. (96.6 ± 1.8°F.).

DEFLECTION

Class	For loads* 1,500 Gm. (3.31 lb.) to		
	2,500 Gm. (5.51 lb.)	4,000 Gm. (8.82 lb.)	
	Max.	Min.	Max.
Self-curing repair resins	mm. 1.5 (0.059 in.)	mm. 1.0 (0.039 in.)	mm. 4.5 (0.177 in.)

*Deflections shall be measured from an initial load of 1,500 Gm. (3.31 lb.) to the load indicated.

4. SAMPLING, INSPECTION AND TESTING PROCEDURES

Sampling, inspection and testing of the repair resins shall be conducted as described in A.D.A. Specification No. 12 with the following two exceptions. Paragraph 4.1 and paragraph 4.3.1.2 shall be changed to read:

4.1 Sampling. A ½ lb. (223 Gm.) bottle of powder and a sufficient amount of liquid to combine with the powder shall be procured at retail by a member of the American Dental Association. This sample shall be forwarded in the original unopened package or packages to the American Dental Association Research Division, National Bureau of Standards, Washington 25, D. C.

4.3.1.2 Packing Test. The packing test shall be conducted as described in paragraph 4.3.1.2 except that the test shall be started three minutes instead of five minutes after the proper plasticity has been reached.

5. PREPARATION FOR DELIVERY

The packaged resin shall conform to the packaging and marking requirements of A.D.A. Specification No. 12 with the following exception. Paragraph 5.2.3 Net Weight and Volume shall be changed to read:

5.2.3 Net Weight and Volume. The minimum net weight in pounds or grams and the minimum net volume in ounces or milliliters of liquid shall be given in legible type on the container.

American Dental Association Film Library

BUREAU OF LIBRARY AND INDEXING SERVICE

Because of the time involved in previewing and scheduling films for the annual session motion picture program, the deadline for consideration of films to be exhibited in the 1959 Centennial Session is April 15, 1959. Application forms are available and films should be sent to the A.D.A. Film Library, 222 E. Superior St. for screening by the preview panels and the Council on Scientific Session.

The following films and slides have recently been added to the Film Library:

Dental Pathology • 158 2 x 2 slides, color and black and white, guide. Produced by Clay-Adams with the cooperation of Charles Darlington and Oscar Miller of the New York University College of Dentistry. Rental from A.D.A. Film Library $3.50.

A reference collection of photomicrographs and roentgenograms of dental lesions, normal anatomy, ankylosis, tooth pathology, pulp, and root resorption. Slides from this type of collection may be selected for use in connection with an essay. Individual slides may be purchased from the producer.

Tooth and Tooth Development • 55 2 x 2 slides, color. Produced by Clay-Adams with the cooperation of Moses Diamond, Wendell J. S. Kreig, Daniel Ziskin and Joseph Pick. Rental from A.D.A. Film Library $2.50.

This collection includes photomicrographs and photographs showing normal histology. The tooth bud stage, developing teeth, path of calcification and gingival development are shown.

Anatomy of the Head and Neck • 55 2 x 2 slides, color. Produced by Clay-Adams with the cooperation of Earl Butcher, New York University College of Dentistry. Rental from A.D.A. Film Library $2.50.

A series of slides showing 49 dissections of the head and neck. Six charts are used to orient the viewer.

FILM REVIEWS

The following three films are kinescope recordings of a closed-circuit television presentation at the 1957 annual session of the Massachusetts Dental Society. The series was sponsored by Wyeth Laboratories. The films are available without charge from Wyeth, P. O. Box 8299, Philadelphia 1, Pa., or they may be rented from the American Dental Association Film Library.

Clinico-Pathological Conference • 16 mm., sound, black and white, 36 minutes. Rental from A.D.A. Film Library $1.50.

Several interesting examples of oral lesions are presented with case histories, roentgenograms, laboratory findings and other diagnostic aids. Differential diagnoses for lichen planus, giant cell tumors and Paget's disease are made by Thomas W. Quinn and Kurt H. Thoma. Microscopic pathologic diagnosis is presented by Gerald Shklar.

Gingival Surgery in Periodontal Therapy • 16 mm., sound, black and white, 22 minutes. Rental from A.D.A. Film Library $1.50.

After diagnosis, a gingivectomy is performed for a patient with periodontal disease. A medical examination was negative and systemic causes were set aside. The depth of the pockets ranged from 5 to 8 mm. Models of cusp to cusp relation and roentgenograms of the periapical conditions are shown. The diagnosis is periodontitis and occlusal trauma. Postoperative results of treatment of the right maxillary region are noted and treatment of the left maxillary region is shown in detail. Jack Bloom and Henry M. Goldman present the case report.

Present Status of Antibiotics in Dentistry • 16 mm., sound, black and white, 18 minutes. Rental from A.D.A. Film Library $1.50.

The film opens with a progress report. The changing spectrum of bacterial resistance to

antibiotics, the appearance of new antibiotics, and new forms of antibiotics are discussed. Charts and tables are used. Penicillin and its forms are discussed in terms of staphylococci resistance. Novobiocin, its uses and limitations, are discussed along with sulfamethoxypridazine. Penicillin V is compared with penicillin G for intramuscular and oral use. The appearance on the market of combinations of drugs is discussed.The tabular material is not too readable, but the handling of the subject is excellent.

Clinical Procedure in Periodontal Therapy—Part II • 16 mm., sound, color. Produced in 1956 by The State University of Iowa. Rental from A.D.A. Film Library $4.50.

A range of surgical technics is presented in one film. The armamentarium is shown. A detailed procedure for curettage is followed by mucogingival surgery and "gingival extension," osseous resection with osteoplasty and the surgical treatment of a bifurcation involvement. A demonstration of home prophylaxis with roentgenographic evidence of results of treatment is given.

The presentation is limited as a detailed coverage of the operations performed. Good general information is given.

NEW EQUIPMENT

A new 2 x 2 slide projector, the Minolta Mini Projector, is being marketed. This compact 100 watt projector has a short focus lens and is ideal for table clinic use. The projector might have some application to patient education in the dental office but is not recommended for large group showings.

Additions to the Library

BUREAU OF LIBRARY AND INDEXING SERVICE

The books listed here have been added recently to the Library collection. Requests for this material, available on loan to all members of the Association, should be addressed to the Bureau of Library and Indexing Service. There is no charge for borrowing books, but there is a minimal charge of one dollar for package libraries. Practically all the the dental journals in the world at present are available also to members on loan. Lists of books and package libraries are also available on request.

BOOKS

American College of Dentists. An evaluation of the ILWU-PMA dental care programs and some socio-economic factors related to dental practice. (Reprinted from *Journal of the American College of Dentists*, September 1958.) St. Louis, 1958. 93 p.

American College of Dentists. An outline for a continuing educational program for the dental profession. St. Louis, 1958. 81 p. Mimeo.

American College of Dentists. Committee on Financial Aid to Dental Education. Suggestions for fund drives to aid dental education. St. Louis, 1958. 105 p.

American Dental Association. American dental directory, 1959. Chicago, 1959. 1218 p. $15.

American Dental Association. Dental projects for high school students. Chicago, 1959. 31 p.

American Dental Association. Council on Dental Therapeutics. Accepted dental remedies; drugs used in dental practice including a list of brands accepted by the Council on Dental Therapeutics of the American Dental Association. 24th ed. Chicago, 1959. 210 p. $3.

AMERICAN INSTITUTE OF DENTAL MEDICINE. The fifteenth anniversary meeting, October 12-16, 1958, the Desert Inn and Oasis Hotel, Palm Springs, California; lectures. Berkeley, Calif., 1958. 228 p.

AMERICAN SOCIETY OF DENTAL SURGEONS. Minute book, 1840-1856. 215 p. Photostatic copy.

ASSOCIAZIONE EUROPEA ODONTOSTOMATOLOGICA PER GLI IMPIANTI. Atti del secondo simposio internazionale degli impianti alloplastici. Pavia, Clinica Odontoiatrica dell'Università, 1959. 346 p. $11.50.

BERNSTEIN, T. M. Watch your language; a lively, informal guide to better writing, emanating from the news room of the New York Times. Great Neck, N. Y., Channel Press, 1958. 276 p. $3.95.

BRITISH SOCIETY FOR THE STUDY OF ORTHODONTICS. Transactions, 1957. Bristol, Wright, 1958. 115 p.

BUCHANAN, ANDREW. Film-making from script to screen. London, Phoenix House, 1951. 159 p. $2.25.

CARTER, RICHARD. The doctor business. Garden City, N. Y., Doubleday, 1958. 283 p. $4.

CERVERA, A. J. Indice bibliográfico ortodóncico; index to orthodontic literature, 1954-1955. Valancia, 1957. 2 v.

CHICAGO. WELFARE COUNCIL OF METROPOLITAN CHICAGO. Survey of dental clinics in Metropolitan Chicago 1956-1957. Chicago, 1958. 55 p. $1.25.

EDCO EDUCATIONAL COMMUNICATIONS COMPANY. The parents' manual of orthodontics. Denver, 1958. 17 p.

EDUCATORS GUIDE TO FREE FILMS. 18th ed. Randolph, Wis., Educators Progress Service, 1958. 616 p. $7.

FANNING, R. J. Your child's teeth; a pattern for lifelong dental health. New York, Vantage Press, 1958. 79 p. $2.95.

FOLDES, F. F. Muscle relaxants in anesthesiology. (American lecture series No. 294.) Springeld, Ill., Thomas, 1957. 210 p. $5.50.

FOLKS, HOMER. Public health and welfare; the citizen's responsibility. Selected papers, edited by Savel Zimand. New York, Macmillan, 1958. 475 p. $7.

FOSS, P. O. The ILWU-PMA group dental program in Oregon. Eugene, Ore., 1957. 124 p. Mimeo.

GERMANY (FEDERAL REPUBLIC). BUNDESVERBAND DER DEUTSCHEN ZAHNÄRZTE. Vorschriften über die Ausbildung und Prüfung für den Lehrberuf "Zahnärztliche Helferin." Cologne, 1954. 24 p.

GREEP, R. O., ed. Histology. New York, Blakiston, 1954. 953 p. $12.50.

GROSSMAN, L. I., ed. Lippincott's handbook of dental practice. 3d ed. Philadelphia, Lippincott, 1958. 534 p. $14.

HACKEL, J. P. 14 articles on visual education in medicine. (Reprinted from *New York State Journal of Medicine*.) New York, Medical Film Guild, 1958. 22 p. $1.

JORDAN, E. P. The physician and group practice. Chicago, Year Book Publishers, 1958. 238 p. $6.75.

KERR, D. A.; ASH, M. M. & MILLARD, H. D. Oral diagnosis. St. Louis, Mosby, 1959. 419 p. $10.

LOVETT, ETHELBERT. An approach to ethics. Baltimore, 1958. 74 p. $2.10.

MEYER, IRVING. Osteoradionecrosis of the jaws. (Practical dental monographs, November, 1958.) Chicago, Year Book Publishers, 1958. 51 p.

MOYER, V. E. Climatological factors influencing the incidence of endemic dental fluorosis in Texas. Vol. 1. Austin, Texas State Department of Health, 1958. 44 p. Mimeo.

NATIONAL RESEARCH COUNCIL. FOOD AND NUTRITION BOARD. Recommended dietary allowances. Washington, 1958. 36 p. $1.

NEW ENGLAND BOARD OF HIGHER EDUCATION. Dental manpower needs in New England. Winchester, Mass., 1958. 79 p.

NEY (J. M.) COMPANY. Bridge & inlay book; a combined edition. Hartford, Conn., 1958. 190 p. $2.50.

NEY (J. M.) COMPANY. Gold handbook. Hartford, Conn., 1956. 62 p. $1.

NEY (J. M.) COMPANY. The Ney Chayes technic. Hartford, Conn., 1958. 56 p. $1.50.

NEY (J. M.) COMPANY. Planned partials. Hartford, Conn., 1957. 139 p. $2.50.

NYLEN, M. U. & SCOTT, D. B. An electron microscopic study of the early stages of dentinogenesis. (Public Health Service Publication No. 613.) Washington, Govt. Print. Off., 1958. 55 p. $0.45.

ORTHODONTIC DIRECTORY OF THE WORLD. 19th ed. Edited by Oren A. Oliver and William H. Oliver. Nashville, Tenn., American Association of Orthodontists, 1958. 254 p. $6.

PAULY, RAYMOND. Guía clínica para la práctica odontológica en el niño. San José, Universidad de Costa Rica, 1957. 35 p.

PAULY, RAYMOND. Investigación sobre caries y otras condiciones de la boca en los niños de algunas escuelas de San José. Trabajo realizado por Raymond Pauly con la coloboración de Rolando Guzman. San José, Universidad de Costa Rica, 1957. 93 p.

PAULY, RAYMOND. Odontología infantil. San José, Universidad de Costa Rica, 1957. 329 p.

PAYNTER, K. J. & PUDY, G. A study of the structure, chemical nature, and development of cementum in the rat. (Reprinted from the *Anatomical Record*, Vol. 131, No. 2, June 1958.) Philadelphia, 1958. 18 p.

SINGER, CHARLES & OTHERS, editors. A history of technology. Vol. 5: c1850 to c1900. Oxford, Clarendon Press, 1958. 888 p.

STREAN, L. P. The birth of normal babies. New York, Twayne Publishers, 1958. 194 p. $3.95.

U. S. AIR FORCE. AIR UNIVERSITY. SCHOOL OF AVIATION MEDICINE. Development of methods for evaluation of rotating dental diamond abrasive instruments, by Jack L. Hartley, Donald C. Hudson, W. T. Sweeney and George Dickson. (Project No. 56-67.) Randolph, Texas, 1956. 10 p.

U. S. AIR FORCE. AIR UNIVERSITY. SCHOOL OF AVIATION MEDICINE. The effectiveness of a topical application of stannous fluoride in a preventive dentistry program; a review of the literature, by Norman O. Harris and Warren R. Hester. (Review 2-59.) Randolph, Texas, 1958. 18 p.

U. S. CONGRESS. HOUSE. COMMITTEE ON GOVERNMENT OPERATIONS. False and misleading advertising (dentifrices). Hearings, 85th Congress, 2d session. Washington, Govt. Print. Off., 1958. 224 p.

Written work authorizations required in Georgia

COUNCIL ON DENTAL TRADE AND LABORATORY RELATIONS

The Council is pleased to report that the Board of Dental Examiners of Georgia has issued the following letter recently to licensed dentists in that state:

Acting by and under the legal authority, statutes and judicial rulings conferring upon this Board the responsibility for the regulation of the practice of dentistry in the State of Georgia, the Board has unanimously adopted a Statement of Policy requiring all holders of dental licenses to furnish a written prescription for all laboratory work to be performed by dental laboratory technicians or any other unlicensed person.

The requirement for written prescriptions shall be effective April 1, 1959, and ample advance notice is given so that you will have knowledge of the regulation and can conform thereto.

It is deemed necessary to promulgate and enforce this regulation in the public interest and in the interest of improved dental health service and improved relationship between the profession and technicians.

No specific form of prescription is required but the Board does require certain necessary information for each separate and individual piece of work to be done by a dental laboratory technician or unlicensed person, and this must include:

a. Name and address of laboratory technician or unlicensed person;

b. patient's name or case number;

c. date on which prescription is written;

d. a description of the work to be done, with diagram if necessary;

e. a specification of the type and quality of materials to be used;

f. signature and address of licensed dentist.

The prescriptions must be written in duplicate. The original is to be delivered to the laboratory technician or unlicensed person and the dentist shall retain a duplicate. The originals and duplicates must be kept in the files for a period of two years from date of delivery of prescription and subject to periodic investigations by duly authorized agents of the State Board.

This is a history making progressive step that is already on the statute books of many of our neighboring states, and we trust that we can count on you for your cooperation and strict observance.

The Georgia State Dental Laboratory

Association has pledged its cooperation in this program for written work authorizations.

The American Dental Association is on record urging that each state dental practice act require such written authorizations for laboratory services. It also urges that the state dental examining board or equivalent agency should have the authority and means to investigate adequately the extent to which dentists comply with the written work authorization requirements. Specifically, the Association suggests that each state dental practice act provide that:

1. Commercial dental laboratories must retain the original of each work authorization received, and the dentist a duplicate copy of each work authorization issued, for a period of at least one year.

2. The board of dental examiners, or equivalent agency, shall spell out by regulation the principal features of a proper work authorization and shall be authorized to conduct or arrange for the inspection of work authorization records retained by dentists and commercial dental laboratories.

3. The failure to comply with the written work authorization requirements shall be appropriately met with sanctions.

At the close of 1958, the dental laws of 27 states required the use of written work orders, authorizations or prescriptions in transactions between dentists and commercial dental laboratories. It should be noted also that the dental laws of ten additional states, including Georgia, might support the issuance by the board of dental examiners of a rule or regulation requiring the use of written work orders, authorizations or prescriptions.

The automobile shown above was parked at the entrance to the hotel in Macon, Georgia used by the Western District Dental Society for its January meeting. The placard urges support of the "denturist" bill introduced recently in the Georgia legislature.

book reviews

APPLIED MEDICAL LIBRARY PRACTICE

By Thomas E. Keys, M.A. 495 pages. $10.75. Springfield, Ill., Charles C Thomas, 1958.

This is a difficult volume to review. It contains a vast collection of material and consequently there is something of interest to several groups of people, such as librarians of various sorts of libraries; physicians who have their own libraries, or who use medical libraries; editors of professional journals; medical historians, and library trustees who wish to become more familiar with the functions of a library.

Much background information on the origin and development of many types of libraries and their services is included. Research libraries, hospital libraries for staff and patients, and medical school and medical society libaries are discussed.

Histories and activities of many separate libraries are described in great detail. Dental libraries, except for the American Dental Association, are scarcely mentioned. Even such well-known dental libraries as that of Northwestern University are omitted completely.

The volume contains a number of useful lists, such as medical indexes, abstract journals, publishers of medical and related books, medical bookdealers, and antiquarian booksellers.

This reviewer would have liked to find more information on such essential subjects as cataloging and medical classification. A scant eight pages are devoted to these important subjects. Some evaluation of the various medical classifications would also be helpful.

In discussing the acquisition of books and journals, the statement is made that the discount rate for scientific books is small, generally averaging 10 per cent. Although this is true of smaller libraries, larger libraries, which purchase many books, may get a 20 per cent discount on a very high percentage of the books published. There are only a very few books on which a small discount or no discount may be obtained. By cooperative purchasing, and careful selection of a book dealer, considerable savings are possible.

Experienced medical librarians will be familiar with most of the essential information contained in this book; however, some of the less practical information is of value, and all librarians and others interested in medical libraries would benefit, to some extent, by reading this book. *Josephine P. Hunt*

DEFICIENCY DISEASE

By Richard F. Follis, Jr., M.D. 577 pages with tables and illustrations. $14.75. Springfield, Ill., Charles C Thomas, 1958.

The book deals with disturbances which result from deficiency of single nutrients, usually of dietary origin and experimentally produced, and with disturbances resulting from lack of multiple nutrients, usually of natural origin since in most natural deficiency diseases multiple nutrients are lacking. Furthermore, disturbances of extra-dietary origin are discussed which are caused by conditioning factors producing general or local reduction or lack of essential nutrients. The effect of such deficiencies on cells, tissues and organs forms the main theme of the book.

In the chapter on the deficiencies of inorganic elements, the discussion of calcium, phosphorus and fluorine, and in the chapter on vitamins the discussion of vitamins A and D will be of special interest to the dental and oral pathologist. However, it is coming to be recognized more and more that almost every systemic derangement is reflected in altered development of dental and bony structures and maintenance of the mucous membranes. A

systematic study of a book like the present one will help in the diagnosis and treatment of oral diseases.

One feature of this excellent book should be commended. It does not ignore the gaps in our knowledge, but stresses the areas where further research is of urgency. Such areas lie especially in the changes in the soft and hard tissues of the oral cavity caused by multiple deficiencies.

The book, which is excellently printed and illustrated, should not only be a reference text, but should be studied by everybody who is interested in the diagnosis, pathology and treatment of oral diseases.

Joseph P. Weinmann

DAS RÖNTGENBILD IN DER ZAHNÄRZTLICHEN PRAXIS (ROENTGENOGRAPHY IN THE DENTAL OFFICE)

By Eberhard Sonnabend. 227 pages with 343 illustrations and diagrams. Index, bibliography. DM. 25. Munich, Richard Pflaum, 1958.

It was the intention of the author to write a textbook on roentgenography for the student and, at the same time, to present a refresher course and a book that could be consulted by the dental practitioner. These goals have been achieved. Textbooks on roentgenography can make dull and dry reading; however, this is not the case with this book by Sonnabend.

The author has a fluid style in writing and and he did not follow the usual pattern in textbooks. In the first part the complete technical aspect of roentgenography is discussed; then the discussion ranges from the roentgenographic picture as a medium to a well-established diagnosis. The clear-cut explanation of radiopaque and radiolucent areas in normal and in pathologic conditions is invaluable in helping the reader to evaluate roentgenograms. The most valuable feature of the book is the fact that with each roentgenogram shown (and they are extremely clear), an equally large diagram is included in which every landmark and every area of diagnostic value is pointed out and described. Even to the reader who is not familiar with German, these illustrated explanations will be self-explanatory. A chapter dealing with the latest knowledge regarding roentgen-ray damage to the body concludes this valuable book.

The printing is excellent and it will be a valuable addition to the library of every practitioner interested in well founded diagnosis.

Paul M. Doctor

PRELIMINARY REPORT ON VOLUME OF DENTAL CARE, JULY-SEPTEMBER 1957 (U. S. NATIONAL HEALTH SURVEY)

U. S. Department of Health, Education, and Welfare, Public Health Service. 22 pages, with 11 tables and 5 graphs. 25 cents. Washington, D.C., Government Printing Office, 1958.

This pamphlet presents the first dental findings of the national health survey which was begun in 1957. It includes statistics on the number of people seeing the dentist during the three-month period, by age and by type of treatment received. Time interval since last dental visit is given, by age and sex of patient. An estimate is given of the number of edentulous persons in each age bracket in the United States.

An appendix entitled "Technical Notes on Methods" outlines sampling procedures followed in obtaining a representative sample of the United States population. Also presented are notes on the interview process, methods used in data processing, and definitions of terms.

The national health survey, scheduled to continue indefinitely, also gathers data on general health conditions, disability and treatment by physicians. In addition to the continuing household interviews, plans are under way to give medical and dental examinations to a representative sample of the United States population.

B. Duane Moen

EMERGENCY WAR SURGERY, NATO HANDBOOK

411 pages with 18 illustrations. Index. $2.25. Washington, D. C., Government Printing Office, 1958.

This compact handbook sets forth the principles for the care of casualties in any forward area of combat. It is intended to enhance total medical care for every member of the Allied fighting forces whenever and wherever he may become a medical responsibility because of injury. The outlines for management of injuries cover only the principles and technics of emergency care of casualties through the first three echelons of medicomilitary treatment of the injured; that is, the battalion aid station, the clearing station, and the field or evacuation hospital. No attempt is made to define the principles or discuss the problems of definitive care which may terminate in large general hospitals.

The book is divided into four sections as follows: Types of Wounds and Injuries, Response of the Body to Wounding, General

Considerations of Wound Management, and Regional Wounds and Injuries. Under each heading there are ten or more chapters which provide clear, concise detailed information, devoid of extraneous material. At the end of each chapter are brief comments on the management of mass casualties which suggest measures, based on compromises, that would save the lives of the greatest possible number of victims during the initial critical hours of a mass casualty situation.

Although the book was prepared for use by military personnel, a reader can find ample material applicable to the civilian problems arising when injuries are to be dealt with; it should be of particular interest to those vitally concerned with certain aspects of civilian defense. The chapter on shock and resuscitation is noteworthy in this regard. At the conclusion of the text are appendixes which include a glossary of drugs and several useful tables.

Any practitioner whose professional endeavor includes the emergency care of the injured will find this little book a handy source of worthwhile information.

Herbert J. Bloom

A HISTORY OF PUBLIC HEALTH

By George Rosen, M.D., Ph.D., M.P.H. 551 pages. $5.75. New York, MD Publications, Inc., 1958.

The author presents in great detail the history of public health starting from earliest civilization up to the present time. Throughout, the book points up the close relationship between scientific methods for health services, and the social, political and economic aspects of community development and community life.

The book describes the origin of public health when such problems as sanitation, housing and cleanliness and their effect on communities were occupying the attention of community leaders. This theme is carried through the many eras of civilization—the Greco-Roman World, the Middle Ages, the period of mercantilism and absolutism, the times of enlightenment, revolution, and industrialism—up to the present era in which we have the modern public health movement. It describes the step-by-step concepts which brought us to our present state of public health practice—the "miasma" theory, the bacteriological era, and the current thinking where the emphasis has shifted from the parasitic world to the human being, the community and the social, political and economic forces which play such an important role in matters of health today. Although there is little in the book which deals specifically with dentistry, the author includes the need for attention to dental public health in the modern public health program. He makes special mention of the need for such prophylactic measures as the fluoridation of water to control dental caries.

The book brings to life the names and history-making contributions of the memorable figures in public health. The reference section of the book is uniquely divided and well presented. A bibliography, a "Who's Who" in public health, selected periodicals concerned with public health, public health societies, schools of public health, and subject and author indexes are included. Although the book will have its greatest interest for physicians and public health workers, the progressive dentist who sees his services as a part of the over-all community health picture will find this book worth reading and worthy of a place in his library.

David B. Ast

THE PRESENTATION OF TECHNICAL INFORMATION

By Reginald O. Kapp, B.S. 140 pages. Index. $2.95. New York, The Macmillan Co., 1957.

The purpose of this book is to improve the reader's ability to write "functional English." The book itself is an example of functional English of a very high order.

After defining functional English and noting how it differs from imaginative literature, the author discusses the problems of functional English, including problems of language and style and problems of psychology.

One interesting chapter is an analysis of the mental processes used by the reader of technical information: associating, understanding and memorizing. Of special value is the chapter on "the proper pace," which points out that the most concise writing is not always the most effective writing. The proper uses of graphs and diagrams, and the difficulties of conveying numerical information are explained.

Other topics include "creating a state of anticipation," "importance of time interval between writing and revising," "effort required to understand a statement coupled with a qualification," "error of confusing metaphorical and literal statements," "aptness and freshness" and "typical examples of carelessness, illiteracy, illogical thinking, ignorance of technical matters."

Mr. Kapp is dean of the Faculty of Engineering, University of London.

B. D. Moen

YEAR BOOK OF DENTISTRY: 1957-1958 SERIES

Edited by Stanley D. Tylman and others. 480 pages with 338 illustrations. Index. $6.50. Chicago, The Year Book Publishers, Inc., 1958.

The dentist in general practice or the family dentist will find this compendium of oral therapy informative, interesting and instructive. The abstracted material from domestic and foreign literature is selected with the aim of serving as a ready reference source. Case reports with illustrations, tables and charts help the practitioner to locate information on daily problems in clinical dentistry. The comments by the editors in the footnotes throughout the volume add to the instructional value of the book.

As a guide to oral therapy, this volume starts with a look at treatment in six phases of general practice, omitting in this edition the chapter on oral diagnosis. Oral health service is covered in the chapters on endodontics, periodontics, oral medicine, orthodontics, surgery and related pathologic conditions, and restorative and prosthetic dentistry. The omission of the chapter on oral diagnosis may be considered a matter of text rearrangement, rather than a minimization of the importance of diagnosis in rational therapy. On the contrary, diagnosis is stressed in endodontics, in periodontics, in oral medicine and other treatment. The index does not include the word diagnosis.

The growing interest on the part of dentists in the basic dental sciences and their impact on clinical dentistry has resulted in a greater concern about dental research. Research in prosthetic dentistry has resulted in a greater concern about dental research in other fields. Research in prosthetic dentistry is given 18 pages. A record of advances in research in oral surgery, oral restoration and other treatments might invite more readers.

As a convenience to the practitioner who is concerned with broadening the biologic and health foundation of his practice, the book might open with "Oral Medicine" as a separate and leading chapter. This could be accomplished easily simply by rearranging the first three chapters, with no additional expense or labor. A slight redistribution of pages would give the dentist ready access to information about nonsurgical oral mucosal lesions of oral medicine, discussed in 30 pages, while pedodontics covers 35 pages and periodontics 38 pages. These are distinct phases of oral therapy and should not be lumped together. Besides, it is confusing to the practitioner.

A colorful portrayal of the impact of socio-economic trends on dental practice is contained in the chapter on dental health. With the limited information generally available, and with the lack of general understanding of emerging forms of group purchase of health care, dentists will find here data they have been looking for on such subjects as radiation hazards, health insurance, consumer plans, group practice, social dentistry in other countries, fluoridation and related fields.

C. W. Harper

RÖNTGENOLOGISCHE DIFFERENTIALDIAGNOSE DER KNOCHENERKRANKUNGEN (ROENTGENOLOGIC DIFFERENTIAL DIAGNOSIS OF THE DISEASES OF BONE)

By Hans Hellner and Hanno Poppe. 903 pages with 518 illustrations. Index. DM. 279. Stuttgart, Georg Thieme, 1956.

Part I of this massive work consists of the atlas (775 pages.) From 70,000 roentgenographic observations in the files of the surgical clinic at Göttingen, the authors have selected 842 films of 500 patients in whom a confirmed diagnosis had been made. The large plates (up to 5 by 7 inches) are reproduced with great care by a fine-screen process. Plates are grouped on a regional basis and provide a survey and differential diagnosis of the more serious bone diseases. It would be impossible to enumerate here the many diseases which are considered, or even their major categories. Suffice it to say that the authors have presented a most complete coverage, except that they felt obliged to abbreviate somewhat the consideration of the inflammatory diseases, rare infections and parasitic diseases, variations, congenital anomalies, and traumatic injuries. Recognizing the importance of early detection of bone tumors, the authors have taken pains to show roentgenograms illustrating some of the earliest stages in neoplastic diseases. The eloquence of the plates obviates an extensive text; most illustrations are accompanied by a few sentences which give pertinent information regarding the case or emphasize features of particular diagnostic significance.

Part II, a short (47 pages) but highly valuable section, presents the general diagnostic viewpoints of the writers; they classify the diseases of bone and give in a crisp, terse style the salient points to be considered in differential diagnosis.

Part III is comprised of a series of drawings of the entire skeleton. In each sketch, solid and dotted lines show the sites of predilection and of occasional occurrence of various bone diseases.

The final section is a 30 page encyclopedia of bone diseases. Under each alphabetic listing appear page and figure references to earlier portions of the book, a list of synonyms, roentgenologic symptoms and a list of diseases for consideration in differential diagnosis.

The quality of halftone reproduction, typography, fine smooth paper and beautiful halfbinding in blue morocco with red and gold stamping are all in keeping with a volume of this magnitude and value. The reviewer predicts that this book will become the constant desk companion of its owner if his practice is based on a critical examination and interpretation of roentgenograms. *Vernon E. Krahl*

PUBLIC EXPOSURE TO IONIZING RADIATIONS

Daniel Bergsma, M.D., chairman, editorial committee. 55 pages with 14 illustrations. $1.35. New York, American Public Health Association, Inc., 1958.

In addition to the booklet sponsored by the American Dental Association surveying available information on the biological effects of ionizing radiation, a number of small books have appeared of which this is one of the more useful because of the nontechnical language used and the explanatory diagrams. Not only is the meaning of ionizing radiations made clear, but the health problems involved in their use are related to the important historical events of our time. Chapters are devoted to the physical character of radiation, its biological effects, how it is measured, how it is used in the modern world and the possible total effects of public exposure.

Special chapters are devoted to protective action, laws and regulations. An excellent glossary is given at the end of the book in which the dentist will find clarification of such terms as skin dose, threshold dose, tissue dose, tolerance dose, rad., rem., rep., radioresistance, radiosensitivity, and for the discussion of genetic effects, zygote, heterozygous, homozygous, and so on. Unfortunately the American Public Health Association has repeated the guesses of the National Academy of Sciences as to the amount of radiation required to produce a single dental roentgen-ray exposure. The figures as given on page 14 are approximately a factor of 10 too high. If their statement of the amount of radiation received by a person wearing a common wrist watch dial over a period of 30 years is accurate, it is possible with modern dental equipment adjusted according to the recommendations of the American Academy of Oral Roentgenology and the American Dental Association to take at least 75 sets of roentgenograms during the 30 year period and expose the gonads to less than the amount received from the wrist watch dial, assuming that the hands were left in repose. On page 19 the authors are unable to distinguish the difference between skin dose at entrance and absorbed dose. Unfortunately they refer to the maximum skin dose while taking dental roentgenograms as being as much as 350 r. It might be possible to approach this figure with obsolete equipment if it were misused. This error should not be perpetuated in modern publications.

This little booklet is an excellent one for dentists and dental students to study in order to learn the fundamental biological effects of ionizing radiation and the important considerations in the future use of x-radiation.

W. W. Wainwright

DYNAMIC ANATOMY AND PHYSIOLOGY

By L. L. Langley, E. Cheraskin and R. Sleeper. 719 pages with 313 illustrations and 8 color plates. Index. $6. New York, McGraw-Hill Book Co., Inc., 1958.

The recent emphasis on the teaching of function with structure has been ably incorporated into this text. This book is designed for the undergraduate college student and hygiene or nursing student who requires a foundation in anatomy and physiology. Diversity of background of students and difference in topic emphasis in various programs have been anticipated by the authors. The result is the separation of anatomy and physiology into separate sections for each of the structures presented; however, the authors relate the individual topics to the broader picture of homeostasis.

Numerous illustrations are employed and are readily understandable. Several photographs of anatomic structures have been used. Surface anatomy is particularly well demonstrated. A series of color plates by R. Demarest have been included in a separate consolidated section and particular attention has been given to labeling the structures and organs that are discussed in college-level courses.

The text thoroughly and interestingly presents the basic fundamentals of human physiology. The section on reproduction includes a remarkable series of photographs of human embryos. Other chapters include such topics as organization of the nervous system, movement, circulation, cells and tissues, skeletal muscles and endocrinology. Sufficient information is provided to furnish a good basis for integration of additional information gained in clinical courses. *J. L. Matthews*

DER GROSSE BROCKHAUS

(THE GREAT BROCKHAUS ENCYCLOPEDIA)

Sixteenth edition. Twelve volumes with 9,300 pages and more than 30,000 illustrations (144 in color) and 865 charts and maps (124 in color). Index. DM.600. Wiesbaden, F. A. Brockhaus, 1953-1958.

No encyclopedic reference work has been more useful and successful, or more frequently copied and translated, than the *Conversations-Lexikon* of Brockhaus, which was published in Leipzig from 1796 to 1808. Friedrich Arnold Brockhaus published this encyclopedia from 1808 to 1817 (third edition). His sons and grandsons continued publishing this work, which frequently changed its title. From 1928 to 1934, the fifteenth revised, corrected and improved edition was issued under the title *Der Grosse Brockhaus*. The work was and is intended not only to provide a treasure of scientific information but to promote general improvement in knowledge by reporting the results of research and discovery in a comparatively simple and popular form without extended details. The articles, although often too brief, are excellent and trustworthy and, especially on German subjects, provide full information on pure and applied sciences, geography and the arts, and include bibliographies of great German and international figures (living or dead).

The sixteenth edition of this work, prepared by the editorial staff of F. A. Brockhaus Publishing Company, now in Wiesbaden, records people and events from prehistoric times to the end of 1957. From time to time supplementary volumes will be issued.

Fortunately for its readers, this encyclopedia has avoided dividing the material into specific classifications. It is hardly necessary to consult the index; the reader will find the information he wants under a specific entry. This is important in the field of dentistry where instead of an immense amount of material compiled into the broad classification *Zahnheilkunde*, each branch of dentistry is treated separately. Most articles on dental subjects are found in volume 12 which contains information on *Zähne* (teeth); *Zahnarzt* (dentist), including dental education; *zahnärztliche Geräte* (dental instruments and apparatuses); *Zahnbein* (dentin); *Zahndeformation* (tooth abnormalities); *zahnen* (erupting of teeth); *Zahnersatz* (prosthetic dentistry); *Zahnextraktion* (tooth extraction); *Zahnfistel* (oral fistula); *Zahnfleisch* (gingiva); *Zahnfüllung* (endodontics); *Zahngeschwulst* (oral tumors); *Zahnkrankheiten* (tooth diseases), and on many others.

It is regrettable that the *Great Brockhaus*, written in excellent and easy understandable German, will not have the wide circulation in this country that it deserves. The high standard of the illustrations, printing, paper and binding makes it a "must" for the libraries of dentists who master German as well as for the libraries of colleges and universities.

Paul H. Glucksman

TREATMENT IN INTERNAL MEDICINE

By Harold Thomas Hyman. 609 pages. Index. $12.50. Philadelphia, J. B. Lippincott Co., 1958.

Somewhat deceptive as to size, this volume represents a rewarding experience for all who consult it. The author has worked out a carefully planned approach in which treatment discussions are presented in ten separate sections, with a total of 110 chapters.

Perhaps the outstanding feature of the book is the extreme practicality of the discussions. This is enhanced by directness and conciseness of writing style and the presentation of innumerable tables that permit the reader to absorb a wealth of immediately applicable information in a minimum of time. An illustrative example of this is a 12-page roster of anti-infective agents in alphabetical order, followed by notes on their clinical use. The next chapter considers special hazards of anti-infective treatment, with a table of reactions, and closes with discussions of prevention and treatment of such disturbances. Two supplements elaborate on these general aspects still further.

The ten sections, each having a varying number of chapters, are placed in three main groups. The first of these contains five sections dealing with infections, metabolic disorders, neoplasms, allergies, and poisonings. The second contains four sections covering disturbances of blood and circulation, mental processes, and the endocrine glands. The final section offers help on complicated problems that cannot be referred immediately to the indicated specialist.

Consonant with the title, treatment is considered in virtually every line of the book. Many situations that might be encountered in the dentist's office are considered, such as shock, hemophilia, and drug allergies and reactions. The American Dental Association statement on dentifrices is quoted in a tabulation of digestive system treatments, and quarterly visits to the dentist are advised in recommendations for cancer prevention.

An extensive general index is provided. Although illustrations are not numerous, all help to sharpen the text greatly.

W. W. Bolton

THERE IS AN ANSWER TO CANCER

By Leonard B. Goldman, M.D. 178 pages. Appendix, bibliography, index. $3.50. New York, Harper & Bros., 1958.

This book's title is, perhaps, a little misleading, for Dr. Goldman does not even once intimate that there is a single answer for cancer. Rather, his point is that regular, thorough examinations and patient education are the foremost answer to the problem of cancer. Pointing out in the preface that in 1957 alone over 150,000 Americans were cured of cancer, Dr. Goldman sets the theme for his interesting book.

In its 15 chapters, he covers the subject well, from an opening chapter which treats with "old wives' tales" through sections on the more common types of cancer, all the way down to the final chapter supplying more answers to cancer.

Obviously, the author has at hand a wealth of practical, important information on a subject which professionals and lay people alike often discuss in hushed tones. The book is clearly written for the layman, but in such a realistic style that physicians and dentists might well profit from it. Knowing an answer to a patient's question is not always sufficient. It is also necessary to know how to express an answer—and Dr. Goldman's text will be a valuable aid.

Make-up, typography and the various technical aspects of this book are more than adequate and contribute to its readability.

Perhaps this volume is not suited for the dentist's reception room, but it is well worth his time to read it—and then recommend it to a patient searching for an answer.

Theodore C. Levitas

MOTIVATING PATIENTS FOR MORE EFFECTIVE DENTAL SERVICE

By J. Lewis Blass. 168 pages with 16 illustrations. Index. $6.50. Philadelphia, J. B. Lippincott Co., 1958.

This monograph is a report of a postgraduate course designed to help the dentist learn better methods of educating the patient to appreciate quality dentistry and plan for acceptable, cooperative financial arrangements.

To evaluate the dentist's personal relationship with the patient, a sentence-completion attitude test was given. The test showed that some dentists feel everything is within their control, some do not always find their work pleasant, some are over-sensitive about fees, and others are concerned about the quality of their work.

All remarks made in the dental office influence the patient. Therefore, the dentist may consciously or unconsciously pass opinions on to the patient that may have a detrimental or a constructive effect. Planned emphasis or repetition is an old method of teaching that is suggested in this book. For example, three visits for examination, taking of history, and discussion were suggested before starting treatment; however, such routine practice may tend to drive the busy and already well-informed patient to another dentist's office.

Throughout the book the psychological approach is used in determining the patient's true feeling toward the dentist who is trying to establish an acceptable fee schedule, and in showing the value of appropriate services. By the nature of their training, dentists are not good psychologists or businessmen. Many dentists stumble while attempting to justify an adequate fee and arrange for a satisfactory payment plan. They often have a tendency to sell products and not services, which opens the way for patients to bargain for a product at a lower fee.

A chapter on clear and agreeable words is excellent. A list of desirable and objectionable words and phrases provides valuable information for the dentist who has not taken inventory of stock phrases used in his daily practice. Dr. Blass shows that education begins in the reception room and continues until the patient is dismissed. All words and phrases should, therefore, be well chosen so that the patient feels his welfare is most important.

Planned procedures are always advisable. Office personnel should know their role thoroughly; they should be convincing but not too much so. In fact, planned permissiveness is desirable, but the patient's views should not supersede the dentist's better technical knowledge. Truth and understanding will create a better relationship.

A careful evaluation of the patient's emotional development and the dentist's awareness of his own emotions will help him realize that it is impossible to change things over which he has no control. Psychological aid can help control pain, relieve anxiety and cause problem patients to become crusaders for dental services.

It would be a good thing if this book caused the dentist to examine himself as well as the patient and use the word "we" in all planning. Any dentist who will take the time to read and study this book surely will find many faults in his own daily practice, and he should be in a much better position to improve his relationships with his patients and to conduct a much more efficient practice.

J. E. Chrietzberg

A TEXTBOOK OF ORTHODONTIA

By Robert H. W. Strang and Will M. Thompson, Jr. Fourth edition. 880 pages, 1,178 illustrations. Index. $20. Philadelphia, Lea & Febiger, 1958.

The main objective of this book is to give the student a solid foundation in the use of the edgewise arch appliance in the treatment of malocclusion of the teeth and associated facial disharmony.

Because the book is limited to instruction in the application of this one appliance, it has been possible to describe the technical procedure in a detailed, step by step manner. The theoretical material has been selected carefully from the textbooks and writings of many eminent authorities.

The chapters devoted to the treatment of malocclusion still follow, fundamentally, the principles and technical procedures advocated by Charles H. Tweed. However, technical modifications in present use by Dr. Tweed are purposely avoided, as it was judged to be too difficult for the initiate to acquire by description only.

For this edition Dr. Strang has been joined by Will M. Thompson. They have thoroughly revised many portions of the text and added a chapter on clinical cephalometrics.

It seems strange, however, that in the authors' attempt to bring the entire work in line with current advances in this specialty, they have not adopted the etymologically correct "orthodontics" in preference to the traditional "orthodontia." Denton's book, *Dentistry and Oral Science*, published in 1958 by the American Dental Association, specifically recommends the term "orthodontics," as does the nomenclature committee of the American Association of Orthodontists.

Teachers, orthodontists, students and dental practitioners will find this book well organized, clearly written and stimulating.

William F. Ford

HOW TO WRITE SCIENTIFIC AND TECHNICAL PAPERS

By Sam F. Trelease. 185 pages. $3.25. Baltimore, Williams & Wilkins Co., 1958.

The technic of writing scientific and technical papers should be mastered by every researcher and should be taught to every would-be researcher, and hence to every student of dentistry. Unfortunately, dental students, graduate dentists and even research investigators are seldom exposed to formal training or even informal perusal of educational material which deals with writing scientific papers. Therefore, it is with particular satisfaction that the present volume—an outgrowth of two earlier books—is received because it gives a clear and concise frame of reference. Its 185 small pages of good sized type are not so lengthy as to be fatiguing to read, nor so brief as to fail to emphasize properly the essentials of good writing. The check list of some common errors in writing is particularly well worth reading.

One can, of course, find fault with some small details, many of which are perhaps matters of personal preference. This book is not directed especially to the field of medicine and hence is deficient in the area of medical jargon, terminology and abbreviations and thus leaves something to be desired. Because medical writing is sometimes somewhat atypical of scientific writing in general, this seems particularly pertinent.

There is a useful but by no means all-inclusive bibliography which, unfortunately, is not integrated into the text by footnotes.

It is this reviewer's opinion that it was an error to attempt any treatment at all of statistical methods in so short a volume. A total of only five pages is devoted to the exposition of the statistics involved in the standard error of the mean, the significance of the difference between means, and the adequacy of sample size. It would be far better to omit such material and provide directions to an adequate source of information, than to give the reader the illusion that these statistical technics are simple.

Over-all, however, the good far outweighs the inadequacies and hence this review is emphatically favorable. *Austin H. Kutscher*

PHYSICIANS AND SCHOOLS: REPORT, SIXTH NATIONAL CONFERENCE ON PHYSICIANS AND SCHOOLS

Edited by W. W. Bauer, and others. Bureau of Health Education, American Medical Association. 150 pages. Chicago, American Medical Association, 1958.

Every odd-numbered year since 1947 the Bureau of Health Education of the American Medical Association has invited representatives from state and territorial kindred associations, health departments, education departments and national health and education agencies concerned with school health to meet to discuss problems of health affecting children and youth.

This Sixth Conference, held at Highland Park, Ill., October 30 to November 2, 1957, was planned with the following purposes:

1. To evaluate progress in youth fitness as

related to the six National Conferences on Physicians and Schools.

2. To discuss effective methods of working together for the improvement of the health and fitness of youth.

3. To explore the basic factors in our present pattern of living which influence the total fitness of youth.

4. To agree on policies for joint action by workers in public health, education and medicine that will lead to the development of services essential to youth fitness.

5. To point up and emphasize the fundamental responsibilities of each family in promoting the fitness of youth.

A special topic relating to some aspects of health and fitness was assigned to each of ten working groups. The reports of the groups, as well as the major addresses to the conference, provide anyone interested in school and community health with some real insights as to how fitness for children and youth can be achieved. *Perry Sandell*

DIE GESUNDEN UND DIE ERKRANKTEN ZAHNGEWEBE DES MENSCHEN UND DER WIRBELTIERE IM POLARISATIONSMIKROSKOP (THE HEALTHY AND DISEASED DENTAL TISSUES OF MAN AND THE VERTEBRATES UNDER THE POLARIZING MICROSCOPE)

By W. J. Schmidt and A. Keil. 386 pages with 347 text figures and 2 colored plates. Index. DM. 48. Munich, Carl Hanser, 1958.

This book is arranged in three parts, the first of which is a relatively short but important one on the fundamentals of optics, instrumentation and methods. The second part, comprising more than half of the entire volume, gives a detailed account of the finer structure of normal teeth as seen under the polarizing microscope. The dentition of man and numerous other mammals, birds, reptiles, amphibians and fish are systematically considered under the headings of Dentin, Cement and Enamel. The extensive coverage of comparative dental morphology is indicated by the taxonomic index which contains about 300 entries. Part three covers diseased and anomalous dental tissues as revealed by polarized light.

As a whole, the book presents a most illuminating and profitable approach to the study of dental morphology, especially when correlated with information which has been gained through the use of the conventional and electron microscopes. The book should prove invaluable to anyone who wishes to use the polarizing microscope as a research tool in dental studies and would be particularly helpful to students and teachers in those schools which offer a course in comparative dental morphology. In the words of the authors, "This book is useful to all who take a scientific interest in odontology of man and the vertebrates; thus, the zoologist, paleontologist, the human and veterinary anatomists and pathologists and by no means least—since he deals with healthy and diseased dental tissues—the dental surgeon."

The text is supported by an abundant array of excellent photomicrographs and drawings, (645 individual photographs arranged in 347 text figures) the great majority of which are original. The book is well organized and well written; it not only compiles a great amount of work from the literature but presents and correlates newer findings of the authors. The bibliography of about 375 references is an excellent introduction to the pertinent literature (especially the European) and covers the older classical works, as well as quite recent ones on electron microscopy and dental microanatomy. *Vernon E. Krahl*

BAILEY'S TEXTBOOK OF HISTOLOGY

Revised by Wilfred M. Copenhaver, Ph.D., and Dorothy D. Johnson, Ph.D. Fourteenth edition. 633 pages with 478 illustrations. Index. $11. Baltimore, The Williams & Wilkins Co., 1958.

The 22 chapters in this book, simply written and well illustrated, comprise an excellent textbook for teaching dental students and also provide a comprehensive review of the subject of histology for those who require reference work of this nature.

The subject matter has been adequately handled by the authors, as has been consistently demonstrated in previous editions. There are no changes in the general organization of the text; however, several important particular changes are evident. For example, a large number of well described electron micrographs has been included in this revision. A more extensive description of some of the recently developed histochemical technics as applied to the study of microanatomy appears for the first time. An adequate list of references is situated at the end of each chapter.

The style of printing and type size make the book easy to read. This edition is printed on a good quality of paper and is well bound. *George W. Burke, Jr.*

current literature

CLINICAL AND HISTOLOGICAL STUDY OF ALVEOLAR OSTEITIS

Raymond F. Huebsch. J. Oral Surg. 16:473 Nov. 1958.

One of the fundamental requirements in surgery is the nourishment of the wound by an adequate blood supply. This factor, usually overlooked by the dentist, is responsible for the healing of sockets after dental extractions. In order to reduce the incidence of alveolar osteitis and to establish a more adequate blood supply to the clot in those regions where the periodontal membrane has been destroyed and where dense cortical bone lines the coronal portion of the bony defect, small perforations are made with a pointed instrument and mallet through this dense bone into the more vascular regions of the cancellous bone. Also, after the removal of cysts or large encapsulating tumors of the mandible, it has been observed that the resulting bony defect in these regions is lined with a dense, avascular cortical bone. The same procedure of making perforations is used here to nourish the blood clot that naturally fills the defects, or bone chips which may have been used to fill the larger defects. During the past eight years, this practice has greatly reduced the incidence of "dry sockets."

Apparently, in the maxilla this complication does not occur as frequently as in the mandible, because the cortical bone is less dense and the defects filled with blood clots are more vascular. However, alveolar osteitis does occur in those regions in the maxilla where the bone is dense and sclerotic and no provision is made for the blood supply to the defect and clot.

In order to demonstrate this principle histologically, a study of the healing process following molar extractions in white rats was made. Essentially the same observations were noted histologically in the rats as were observed clinically in human beings. The periodontal membrane which remains in the socket is very vascular. Where the periodontal membrane is absent and there is a natural or mechanical perforation in the cortical lining of the socket and communication with cancellous bone, there is marked proliferation of capillaries and fibroblasts. In the regions where there are no perforations in cortical bone and absence of the periodontal membrane, there are no capillaries and less proliferation of fibroblasts, and a delay in healing.

THE THEORETICAL AND FUNCTIONAL EVALUATION OF HIGHER SPEED ROTARY INSTRUMENTATION

Arthur H. Morrison, and Herbert W. Grinnell. J. Pros. Den. 8:297 March 1958.

From the beginning of organized dentistry the concepts of dental treatment have changed. More effective means of cutting tooth structure have been the ultimate goal. In the past five years many changes in instrumentation involving increased rotary speeds have been introduced to the profession.

Rotary instrumentation is divided into four categories: (1) conventional speed, 3,000 to 6,000 rpm (2) medium high speed, 10,000 to 20,000 rpm (3) high speed, 20,000 to 45,000 rpm and (4) ultra high speed, 100,000 rpm and above.

Speed is defined as surface feet per unit of time of contact with a rotary instrument and is explained by the formula: Time x rpm x 2π x radius of cutting tool = linear surface feet per unit time.

Because the width of the cutting tool is a consideration, the following formula is necessary: LSF/per unit time x W = milling or grinding surface in contact per unit time.

Industrial investigation shows that the max-

imum cutting efficiency of a cutting tool of uniform width ranges between 5,000 and 6,000 surface feet per minute. Maximum cutting efficiency can be obtained by altering the size of the stone in ratio to the speed.

Pressure is the result of two factors: force or gripping of the handpiece, and area or amount of cutting tool in contact with the tooth surface. Pressure $= \frac{\text{force}}{\text{area}}$

The result of this maneuver is to have the cutting tool smaller in size with less force applied by the dentist and running at a greater rpm rate.

Heat production is directly proportional to pressure, rpm and area of tool in contact with the tooth. Vibration effects are two in origin. If amplitude and undesirable modulating frequencies can be minimized, the undesirable effects of vibration will be reduced.

In the selection of carbide burs the fluting of the tool, the rigidity of the shank and trueness of the cutting tool should be noted. In the selection of diamond tools a balanced shaft, even distribution of diamond particles, symmetrical perforations and an even thickness of disks and stones must be considered.

Patient apprehension is attributed to heat production, vibration, length of operating time, mental attitude and number of visits needed. Under high speed procedures the patients are more relaxed, more cooperative and less apprehensive.

Operator fatigue is reduced with higher speed instruments because patient apprehension is at a minimum and less force on the cutting tool is needed; this results in more digital control and less slippage and wedging.

If any procedure is accurate and safely completed in less time, it must be economically sound. Most dental equipment in use today can be modified for higher speed technics; thus, the technics described are within the reach of every dentist.

USE OF THE FOLEY CATHETER IN SUPPORTING ZYGOMATIC FRACTURES

John Paul Jarabak. J. Oral Surg., Anesth. & Hosp. D. Serv. 17:39 Jan. 1959.

The zygoma is a diamond shaped, hard buttress bone which, when fractured, involves the antral, oral and orbital cavities. It rarely fractures when struck, but a fracture is often transmitted to the weaker bones of the skull. Characteristic clinical signs of a zygomatic fracture usually are contusion, ecchymosis, anesthesia, diplopia and a depressed "step" of the inferior orbital rim. Roentgenographic confirmation generally shows the "step," separation of the sutural junctions, cloudy antrum, and comminution to the thinner bones of the face.

The means of diagnosis for a fractured zygoma are varied, with roentgenographic examination most important. Also, the history of trauma, palpation, percussion and digital evaluation of the irregularity of the inferior orbital rim are utilized. A tongue blade, when placed in a vertical position running from frontal bone over the prominence of the zygomatic bone, often indicates a depressed fracture. Furthermore, there is usually trismus and limitation of the masticating function.

Of the different types of treatment, the 30 cc. Foley catheter, inflated with either water or air, has the following advantages: (1) Direct visibility to the fractured bone and inferior orbital rim. (2) Ease of trial attempts at positioning fractured bone ends by inflating and deflating catheter. (3) Constant support of depressed fractures by the inflated catheter. (4) Simplified method of hematoma evacuation, washing, and constant drainage through the catheter. (5) Good patient tolerance of the catheter and ease of removal.

In order to maintain additional stability of the reduced fracture, a simple intermaxillary rubber band traction should be used to restrict the function of the masseter muscle.

ROLE OF DENTAL HEALTH EDUCATOR TRAINED IN DENTAL HYGIENE, IN A STATE DENTAL HEALTH PROGRAM

Lucile Mullinix Bowman. J. Tennessee D. A. 38:26 Jan. 1958.

The dental divisions of health agencies recognize dental health education as one of the essential activities in the public health field. Although the dental hygienists have made valuable contributions to the field of dental health education, they find that opportunities to serve more are repeatedly denied. As a co-worker, and not a substitute dentist, the dental hygienist could assume the responsibilities of administering dental health programs under the supervision of a dentist or dentists. She should have such additional preparation as a B.S. or an M.P.H. degree, to qualify for this role.

A questionnaire was sent to 44 state dental directors and three territories having dental divisions. The replies were from 85 per cent of those contacted, and were only the opinions of these directors because few had experience with such personnel on their staff. The tabulations consisted of six tables of information on the role of the dental health educator in

the planning of activities, working with groups and working with mass media, community organization and service.

It was concluded that the dental health educator should maintain good professional relationships with dentists and dental hygienists of the state and attend professional meetings. She should place special emphasis on the planning of dental health programs with school personnel and teachers, including P.T.A. groups, civic groups, dental hygiene schools and teacher educator colleges. She should evaluate present dental health materials and develop new pamphlets for teachers or other interested persons working with mass media. However, mass distribution without personal contact is a poor method of teaching dental health. Communities should be assisted in planning dental health programs, but the final organization, conduction and evaluation of local dental health programs should be of local concern. The direct service given by the dental health educator should be restricted to demonstration to local personnel and could also include the dispensing of instructions for home care of mouth and supporting structures, as well as guidance in low carbohydrate diet for the control of dental decay. The dental health educator should work closely with nurses, nutritionists, and the health educators on the state level, in planning programs.

Evelyn E. Maas

TREATMENT OF ZYGOMATIC FRACTURE-DISLOCATIONS

Walter W. Crowe. J. Oral Surg., Anesth. & Hosp. D. Serv. 17:27 Jan. 1959.

Facial trauma appears to be continuously increasing, and is caused primarily by modern high speed methods of transportation with ever increasing hazards.

The zygoma, because of its anatomic position, is liable to fracture-dislocation, with displacement in the direction of force. Traumatic injuries of the face rarely involve the zygoma alone, but tend to involve the articulating surfaces of the zygoma. Injuries of this nature are referred to as fracture-dislocations of the zygomatic compound.

After injury there is usually considerable edema and ecchymosis, which often masks the true nature of the injury. Failure in diagnosis or treatment may result in permanent facial deformity, associated with enophthalmos, diplopia, abnormal muscular function, and alteration of the eyeball level. Any form of severe facial trauma should receive emergency first aid treatment, followed by evaluation for possible neurologic damage.

Improved methods of anesthesia and patient management have changed treatment of this disorder. Uncomfortable and cumbersome intraoral and extraoral fracture appliances are no longer necessary, and to a large extent they have been replaced by open operations with direct wire fixation.

A recommended treatment of fracture-dislocations is illustrated by direct bone wiring on human skulls. The advantages of this treatment are: (1) The possibility of orbital trauma, infection, or injury to the extraocular muscles of the eye during surgery is reduced to a minimum, since no drill holes have been made into or toward the orbital cavity. (2) The tissues overlying the lateral orbital rim and zygomaticcfrontal suture line are not tender to palpation, since there is no underlying wire knot to irritate the soft tissues. (3) The location of the stainless steel wire on the posterior surface of the zygomatic bone is not objectionable since the wire knot cannot be palpated and lies fairly deep in the temporal fossa. (4) Concomitant facial fractures may be adequately supported during the healing period by utilization of unilateral or bilateral suspension wires from the angular process of the frontal bone.

The cosmetic and functional disabilities associated with fracture-dislocations of the zygoma are distressing, and injuries to the eyes and face are of great concern to an individual, especially those disabilities which have resulted in poor visual acuity, ocular asymmetry, permanent facial deformity, and lack of condylar mobility.

CERVICOFACIAL ACTINOMYCOSIS: A POSTEXTRACTION COMPLICATION

Theodore A. Lesney, and Kimble A. Traeger. J. Oral Surg., Anesth. & Hosp. D. Serv. 17:51 Jan. 1959.

Actinomycotic infection with multiple abscesses forming in the cervicofacial regions is an occasional complication following tooth extraction. Frequently, the onset is heralded by a persistent facial swelling in the general vicinity of the tooth extraction. Such swelling is strongly suggestive of secondary infection by predominant oral flora other than fungus, and is commonly treated as dentoalveolar infection, not otherwise specific. At present it is difficult, if not impossible, to establish actinomycotic infection in this early stage. It can be suspected when such facial swellings persist over a period of weeks and the infection appears to resist those antibiotics proved to be effective (in sensitivity-disk testing) against the predominant organisms isolated from the

region of infection. Usually, actinomycosis is established considerably later in the clinical picture, when an abscess is finally localized and a suppurative specimen is bacteriologically and histologically evaluated.

In the meantime, the patient is quite likely to be treated with a wide assortment of antibiotics, or chemotherapy, or both, without demonstrable benefit.

Two stubborn, persistently chronic cases in which treatment procedures were extended over a period of about five months' hospitalization in each case were studied. In each case, isoniazid therapy was ultimately instituted, after numerous antibiotics were previously provided in adequate dosage; and in each case, response to isoniazid appeared to be rapidly favorable. In other cases at the same hospital, the combination of isoniazid with dihydrostreptomycin was found to be effective in the management of actinomycosis in regions other than the cervicofacial.

When this fungoid disease has reached the stage of multiple abscessing for the formation of deep, suppurating fistulous tracts, medication alone is insufficient to meet the demands of adequate treatment. Good surgical principles concerned with the incision and drainage of localized abscesses, and the surgical exploration of fistulous tracts are necessary. Walled-off abscesses are known to be notorious in resisting systemic medication.

DIAGNOSIS OF ORAL KERATOTIC LESIONS

Louis S. Hansen. J. Oral Surg., Anesth. & Hosp. D. Serv. 17:60 Jan. 1959.

The diagnosis of an oral keratotic lesion can be made confidently only if it is based on a microscopic examination of the lesion, for many keratotic lesions are clinically similar even though they range from benign to malignant types. Until a definitive diagnosis is made, therefore, it would be to the patient's advantage if such a lesion were referred to by a nonspecific term such as keratotic area or keratotic lesion.

Because of the multiplicity and overlapping of terms and classifications used in describing keratotic lesions of the mouth both clinically and microscopically, there is frequent misunderstanding and confusion among clinicians and pathologists. As a result, many of these lesions are diagnosed incorrectly, and hence treated improperly.

A clear understanding of terminology by both clinicians and pathologists is necessary to prevent inadequate treatment of malignant lesions and overtreatment of benign ones.

NEW CHALLENGES FOR THE SCHOOL DENTAL HEALTH EDUCATION PROGRAM

Roscoe C. Brown, Jr., and Irving Bruskin. New York State D. J. 24:69 Feb. 1958.

Nine out of ten children of school age who did not receive dental treatment last year are in need of care for dental caries. Although the dentist and the dental hygienist in the school dental health education program have made valuable contributions in preventing dental decay and in education, the problems today concern the dentist.

Problems involve interpretations of the existing law, the Medical Inspection Act; the evaluation of the objectives of a supervising dentist in a school program; the community family dentist; and the teaching of dental health in a school program in New York.

At present, a variety of programs exist with qualified and not qualified dentists supervising dental programs. The dental hygiene teacher is the key person because attention today is focused on dental health teaching and health appraisal. The dentist who is not an integral part of the school program is only in it by virtue of the Dental Practice Act. His duties are interpreted to supervise the activities of the dental hygienist in the educational program.

By incorporating in the Medical Inspection Act the necessity for annual dental examinations by the family dentist for children of school age, dental treatment would be completed and the supervising dentist of schools could interpret the basis of the school program to the community dentist, as well as establish better interpersonal relations between school administrators. The dental hygienist could continue to give information on materials, films, technics and recent literature, since her major work is with persons closely connected with school programs and community health workers. She has the opportunity to work with children individually during the selective inspection, prophylaxis, and topical application of fluorides and can teach health as a part of the curriculum of the school.

Although the program in the state of New York is fundamentally strong, communication and increasing insight are necessary on the part of administrators, teachers, dental hygienists and dentists alike. The solution may lie in the initiating of conferences, workshops and classes where all can exchange their views on the improvement of the school program. A study should be made of the existing laws of the state of New York to improve the status of the dentist.

Evelyn E. Maas

deaths

Acree, John B., Dadeville, Ala.; Southern Dental College, 1910; died November 6; age 79.

Adkins, Charles L., Kenmore, N. Y.; University of Buffalo School of Dentistry, 1927; died September 26; age 73.

Alfano, Jack G., Chicago; Marquette University Dental School, 1954; died November 9; age 28.

Anderson, P. F., Chickasha, Okla.; died July 8; age 81.

Arnold, Richard J., St. Louis, Mo.; St. Louis University School of Dentistry, 1929; died November 8; age 52.

Bachrach, Louis H., Mansfield, Ohio; Cincinnati College of Dental Surgery, 1915; died November 16; age 67.

Beatty, Erl R., Bradner, Ohio; Ohio College of Dental Surgery, University of Cincinnati, 1904; died September 30; age 77.

Becker, Louis M., Chicago; Loyola University School of Dentistry, New Orleans, 1930; died November 9; age 58.

Bennett, Ralph M., East Norwalk, Conn.; Temple University School of Dentistry, 1907; died November 1.

Bernhard, James W., Washington, D. C.; George Washington University, Dental Department, 1908; died November 21; age 74.

Bowlby, George L. M., Aberdeen, Wash.; Western Dental College, 1910; died September 6; age 71.

Boyer, Ira E., Peru, Ill.; Chicago College of Dental Surgery, 1905; died November 5; age 82.

Branch, Ernest A., Raleigh, N. C.; Atlanta Dental College, 1913; died December 3; age 70.

Bridges, Richard O., Franklin, Ohio; Ohio State University College of Dentistry, 1931; died November 7; age 53.

Bright, John C., Pekin, Ind.; Indiana Dental College, 1902; died November 1; age 85.

Buell, Arthur B., Escondido, Calif.; University of Southern California School of Dentistry, 1929; died November 12; age 54.

Burlew, Conover H., Perth Amboy, N. J.; University of Pennsylvania School of Dentistry, 1915; died November 13; age 65.

Burnham, Victor R., Magee, Miss.; Atlanta-Southern Dental College, 1933; died October 3; age 48.

Burns, John W., Buffalo, N. Y.; University of Buffalo School of Dentistry, 1926; died June 29; age 55.

Butler, Earl J., Chicago; Chicago College of Dental Surgery, 1918; died November 1; age 62.

Campbell, James A., Oakland, Calif.; died November 19; age 69.

Carpenter, Charles H., Casper, Wyo.; Chicago College of Dental Surgery, 1917; died November 19; age 63.

Case, George C., Winsted, Conn.; University of Pennsylvania School of Dentistry, 1897; died October 19; age 82.

Claggett, Thomas J., Easton, Md.; Baltimore College of Dental Surgery, University of Maryland, 1911; died October 20; age 68.

Clark, Asa B., Shelter Island, N. Y.; New York College of Dentistry, 1918; died November 14; age 67.

Cofield, Ernest D., Rushville, Ind.; Indiana Dental College, 1907; died October 29; age 80.

Collins, George, New Philadelphia, Ohio; University of Maryland Dental Department, 1898; died October 23; age 87.

Collins, Robert J., Tipton, Ind.; Indiana University School of Dentistry, 1931; died October 19; age 50.

Colyer, George C., Freeport, L. I., N. Y.; University of Pennsylvania School of Dentistry, 1911; died October 27; age 67.

Compton, James D., Pontiac, Mich.; Detroit College of Medicine, Department of Dental Surgery, 1906; died October 5; age 77.

Cook, James L., Dormont, Pa.; University of Pittsburgh School of Dentistry, 1923; died October 3; age 58.

Crawford, James W., Milwaukee; Vanderbilt University School of Dentistry, 1896; died October 4; age 85.

Crume, Charles E., Clinton, Ky.; Louisville College of Dentistry, 1899; died November 5; age 81.

Deavitt, John B., Rochester, N. Y.; McGill University Faculty of Dentistry, Montreal, Quebec, Canada, 1924; died October 12; age 65.

Dickens, Clem L., Lynchburg, Va.; Medical College of Virginia School of Dentistry, 1906; died October 31; age 71.

Donovan, William D., Malden, Mass.; Tufts College Dental School, 1913; died November 16; age 68.

Dry, Z. V., Winters, Texas; Atlanta Dental College, 1904; died October 5; age 82.

Dunn, Clyde A., Cedar Rapids, Iowa; University of Iowa, College of Dentistry, 1953; died October 13; age 28.

Eagleson, Solon, Olney, Ill.; Ohio College of Dental Surgery, University of Cincinnati, 1907; died November 13; age 77.

Earle, William W., Milwaukee; Marquette University Dental School, 1924; died August 22; age 62.

Eisenstein, Nathan, Washington, D. C.; George Washington University Dental Department, 1913; died August 29.

Elliott, William H., Detroit; Detroit College of Medicine, Department of Dental Surgery, 1903; died October 19; age 81.

Ellis, J. Stanley, Elmira, N. Y.; University of Pennsylvania School of Dentistry, 1911; died October 23; age 68.

Fitzgerald, Gerald W., Boston; University of Louisville School of Dentistry, 1927; died November 5; age 59.

Flaschner, Abraham M., Chestnut Hill, Mass.; Harvard Dental School, 1917; died October 11; age 61.

Foquet, John H., Oil City, Pa.; Philadelphia Dental College, 1895; died November 16; age 84.

Fort, Abbott K., Lake Charles, La.; Atlanta Dental College, 1895; died November 12; age 84.

Fosdick, Willard A., New Haven, Conn.; University of Pennsylvania School of Dentistry, 1912; died December 3; age 68.

Frederickson, Norman C., Ishpeming, Mich.; University of Michigan School of Dentistry, 1928; died November 8; age 59.

Freivogel, William C., Mascoutah, Ill.; St. Louis Dental College, 1905; died October 22; age 84.

Freundlich, David B., New York; New York College of Dentistry, 1905; died October 1; age 78.

Gallagher, Charles V., San Francisco; College of Physicians and Surgeons, 1906; died October; age 84.

Gilkey, Jule E., Paw Paw, Mich.; University of Michigan School of Dentistry, 1907; died November 5; age 73.

Goppelt, Ralph A., Syracuse, N. Y.; University of Michigan School of Dentistry, 1930; died October 20; age 54.

Gorman, Thomas H., New Rochelle, N. Y.; died November 22; age 60.

Gray, Richard R., Milton-Freewater, Ore.; North Pacific College of Oregon, School of Dentistry, 1923; died November 4; age 62.

Green, George N., Oshkosh, Wis.; Chicago College of Dental Surgery, 1898; died October 17; age 84.

Gregory, Herman E., Cleveland; Western Reserve University School of Dentistry, 1925; died October 22; age 59.

Greizman, David, Pittsburgh; University of Pittsburgh School of Dentistry, 1929; died October 25; age 62.

Griffin, Samuel F., Portsmouth, N. H.; Tufts College Dental School, 1911; died November 23; age 68.

Groff, William E., Lexington, Mass.; Chicago College of Dental Surgery, 1907; died October 29; age 76.

Gruye, Ralph E., Worthington, Minn.; University of Minnesota School of Dentistry, 1921; died September 7; age 61.

Hall, Edward, Oswego, Ore.; North Pacific College of Oregon School of Dentistry, 1914; died September 30; age 66.

Harnsberger, Gordon B., Dallas, Texas; died September 17; age 58.

Hawkins, Thomas M., Richmond, Va.; University College of Medicine Dental Department, 1906; died October 15; age 78.

Heyburn, Peter J., Little Rock, Ark.; Kansas City-Western Dental College, 1939; died October 12; age 46.

Hinchman, Harold B., Detroit; University of Michigan School of Dentistry, 1920; died September 27; age 63.

Hinderer, Paul D., Pittsburgh; University of Pittsburgh School of Dentistry, 1928; died October 24; age 52.

Hodge, Charles P., Atlanta, Ga.; Atlanta-Southern Dental College, 1910; died November 14; age 76.

Hogarth, Luther N., Detroit; University of Pennsylvania School of Dentistry, 1892; died October 28; age 89.

Hollingsworth, Orlando O., Arlington, Texas; Washington University School of Dentistry, St. Louis, 1909; died October 4; age 77.

Hurlburt, John M., Wapakoneta, Ohio; Ohio College of Dental Surgery, University of Cincinnati, 1905; died October 17; age 75.

Jedel, Sidney S., Shrewsbury, N. J.; New York College of Dentistry, 1918; died November 24; age 63.

Jenkins, William H., Beeville, Texas; Baylor University College of Dentistry, 1927; died November 11; age 56.

Kameny, Edward, Portland, Ore.; North Pacific College of Oregon School of Dentistry, 1937; died September 28; age 48.

Kaminski, Richard M. J., Chicago; Chicago College of Dental Surgery, 1921; died November; age 62.

Kampstein, Abraham, Brooklyn; College of Dental and Oral Surgery, New York, 1922; died August 31; age 59.

Kaplan, Alex M., Detroit; University of Detroit School of Dentistry, 1936; died September 29; age 50.

Kellogg, Osmer B., Los Angeles; University of Denver School of Dentistry, 1924; died October 19; age 57.

Kresloff, Morris S., Philadelphia; Temple University School of Dentistry, 1940; died November 17; age 54.

Lambrechts, Emil D., St. Louis; Washington University School of Dentistry, St. Louis, 1905; died October 26; age 72.

Langland, Edwin E., Story City, Iowa; University of Iowa College of Dentistry, 1922; died November 11; age 59.

Laytham, Joel E., Centralia, Wash.; University of Washington School of Dentistry, Seattle, 1957; died November 1; age 36.

Leach, Mark A., Pendleton, Ore.; University of Pennsylvania School of Dentistry, 1903; died November 15; age 82.

Leak, William H., New York; University of Buffalo School of Dentistry, 1902; died November 21; age 78.

Levy, Isaac J., Miami Beach, Fla.; University of Pennsylvania School of Dentistry, 1915; died November 4; age 65.

Link, Walker C., Gallatin, Mo.; St. Louis University School of Dentistry, 1914; died October 26; age 73.

Lockman, William A., Cincinnati; Cincinnati College of Dental Surgery, 1895; died October 23; age 94.

Logan, William C., Salem, Va.; Atlanta-Southern Dental College, 1925; died October 24; age 56.

Loynd, George R., Champaign, Ill.; University of Illinois College of Dentistry, 1904; died November 2; age 73.

Manchester, LeRoy B., Langley, Wash.; Northwestern University Dental School, 1905; died October 30; age 77.

Mancin, Alexander A., Banning, Calif.; Western Reserve University School of Dentistry, 1941; died November 7; age 52.

Mathews, Oliver S., Seattle; Northwestern University Dental School, 1923; died October 24; age 65.

McChesney, John R., Washington, D. C.; Columbian University Dental Department, Washington, D. C., 1899; died September 29; age 80.

McCulloch, Earl C., Gloversville, N. Y.; New York Dental School, 1903; died September 28; age 80.

McGauley, Frank H., Baltimore; Georgetown University School of Dentistry, 1919; died September 7; age 61.

Merser, Herbert B., Boston; Harvard Dental School, 1920; died November 3; age 62.

Mitchell, George Baker, Buffalo; University of Buffalo School of Dentistry, 1901; died July 16; age 79.

Mooney, Earl R., Wichita, Kan.; died October 10; age 80.

Moore, Sidney H., Holland, N. Y.; University of Buffalo School of Dentistry, 1906; died September 27; age 77.

Morehouse, Clayton C., Kenmore, N. Y.; University of Pennsylvania School of Dentistry, 1915; died September 28; age 64.

Morgan, Charles A., State College, Pa.; University of Pittsburgh School of Dentistry, 1926; died September 9; age 55.

Mulder, Edward W., Grand Rapids, Mich.; University of Michigan School of Dentistry, 1917; died October 3; age 66.

Mullinix, William E., Jamestown, Tenn.; Louisville College of Dentistry, 1907; died October 11; age 76.

Munblatt, Max A., Long Beach, N. Y.; New York College of Dentistry, 1917; died July 24; age 63.

Murphy, Michael P., New York; New York College of Dentistry, 1913; died October 30; age 74.

Murray, James H., Cincinnati; Cincinnati College of Dental Surgery, 1911; died November 13; age 78.

Myrose, Ross R., Hammonton, N. J.; University of Pennsylvania School of Dentistry, 1908; died October 16; age 71.

Neuman, Frank, New York; University of Buffalo School of Dentistry, 1918; died September 24; age 62.

Niemann, Fred A., Ponca City, Okla.; Western Dental College, 1913; died September 20; age 68.

Norris, Frank E., Portland, Maine; died November 8; age 75.

Page, Zeno B., Seattle; North Pacific College of Oregon, School of Dentistry, 1916; died November 24; age 67.

Paleg, Baane, New York; New York College of Dentistry, 1914; died September 29; age 68.

Peeler, C. M., Shelby, N. C.; Southern Dental College, 1910; died November 19; age 73.

Pegues, Clarence L., Marion, Ala.; University of Maryland Dental Department, 1909; died September 27; age 77.

Pemberton, Berkeley M., Swoope, Va.; Baltimore College of Dental Surgery, University of Maryland, 1912; died November 3; age 68.

Perlich, Harry A., Minneapolis; University of Minnesota School of Dentistry, 1914; died September 1; age 65.

Petriella, Anthony R., San Francisco; Indiana University School of Dentistry, 1955; died October 29; age 27.

Powers, Alonzo E., Leeds, Ala.; Birmingham Dental College, 1903; died October 1; age 79.

Proctor, Frank, Pratt City, Ala.; Meharry Medical College School of Dentistry, 1928; died October 23; age 58.

Prunty, John V., Decatur, Texas; Western Dental College, 1899; died November 22; age 84.

Quinn, Henry T., Greenwich, Conn.; University of Pennsylvania School of Dentistry, 1924; died November 21; age 55.

Raeder, John L., Dedham, Mass.; Tufts College Dental School, 1953; died September 27; age 34.

Raetz, Edward W., Oskaloosa, Iowa; University of Iowa College of Dentistry, 1922; died October 14; age 58.

Rappaport, Edward D., Rockville Center, N. Y.; New York University College of Dentistry, 1926; died October 28; age 53.

Reavis, Charles M., Paris, Texas; died October 25; age 85.

Reedy, William L., Chicago; Northwestern University Dental School, 1900; died December 8; age 88.

Regan, William D., Brooklyn; Columbia University School of Dental and Oral Surgery, 1926; died October 29; age 65.

Reinig, Charles N., Winslow, Wash; Philadelphia Dental College, 1899; died September 27; age 87.

Rhein, Samuel, Hartford, Conn.; died November 17; age 80.

Richardson, Elbridge M., Scotia, N. Y.; University of Maryland Dental Department, 1900; died December 1; age 80.

Robertson, Oliver T., Terrace Park, Ohio; Ohio College of Dental Surgery, University of Cincinnati, 1892; died October 12; age 86.

Rohrbaugh, Frederic J., Zanesville, Ohio; Ohio State University College of Dentistry, 1924; died November 5; age 58.

Roush, Charles E., Marion, Ind.; Indiana University School of Dentistry, 1933; died October 29; age 50.

Sanderson, Harvey L., Butler, Pa.; University of Pittsburgh School of Dentistry, 1915; died October 17; age 67.

Schlossman, Henry R., Appleton, Wis.; Marquette University Dental School, 1919; died October 10; age 62.

Schweiger, David B., Philadelphia; Pennsylvania College of Dental Surgery, 1908; died October 17; age 75.

Sebert, Clarence A., Clinton, Okla.; University of Kansas City School of Dentistry, Kansas City-Western Dental College, 1943; died September 13; age 39.

Shallman, Morton, Chicago; Loyola University School of Dentistry, Chicago College of Dental Surgery, 1940; died October 29; age 44.

Shannon, Howard R., Strathmore, Calif.; University of Iowa College of Dentistry, 1903; died November 12; age 78.

Sharp, Charles B., Ottawa, Ill.; University of Illinois College of Dentistry, 1904; died October 1; age 78.

Shaw, John B., Fort Wayne, Ind.; Indiana University School of Dentistry, 1942; died October 15; age 40.

Shelton, Robert E., Boise, Idaho; died October 26; age 72.

Sherman, Harvey W., Newport News, Va.; Medical College of Virginia School of Dentistry, 1918; died November 12; age 63.

Sherman, Maxwell, Hingham, Mass.; Tufts College Dental School, 1921; died October 23; age 62.

Skendle, Roy C., San Francisco; College of Physicians and Surgeons, 1943; died October 15; age 44.

Skinner, Robert G., Easton, Pa.; University of Pennsylvania School of Dentistry, 1938; died October 10; age 44.

Smith, Charles E., Dixon, Ill.; Northwestern University Dental School, 1903; died October 8; age 81.

Smith, Pliny W., Rochester, N. Y.; University of Buffalo School of Dentistry, 1900; died November 18; age 81.

Snowdon, Harold H., Sault Ste. Marie, Mich.; Chicago College of Dental Surgery, 1914; died September 22; age 67.

Sparks, Fred D., Arkansas City, Kan.; Indiana Dental College, 1898; died October 26; age 84.

Sparks, Thurman C., Irmo, S. C.; Atlanta-Southern Dental College, 1923; died October 10; age 63.

Spieth, William O., Cleveland; Western Reserve University School of Dentistry, 1902; died October 25; age 81.

Stejskal, Adolph E., Schuyler, Neb.; University of Nebraska College of Dentistry, 1933; died November 15; age 53.

Sternberg, Louis, Bronx, N. Y.; New York College of Dentistry, 1917; died September 15; age 63.

Stewart, C. Herman, Farragut, Iowa; Creighton University College of Dentistry, 1908; died October 13; age 76.

Stickels, Roy T., Seattle; North Pacific College of Oregon School of Dentistry, 1924; died August 19; age 62.

Stith, Andrew H., Chicago; Chicago College of Dental Surgery, 1915; died September 20; age 68.

Straub, Philip T., Los Angeles; University of California College of Dentistry, 1940; died December 6; age 41.

Stubbs, James S., Sanger, Texas; died September 29; age 80.

Swaisgood, Forest L., Detroit; Northwestern University Dental School, 1919; died September 21; age 64.

Taggart, Charles I., Burlington, Vt.; Tufts College Dental School, 1921; died September 30; age 58.

Tapia, Alfonso L., Crawfordsville, Ind.; Indiana University School of Dentistry, 1946; died October 8; age 35.

Thorburn, Howard L., South Harpswell, Maine; Tufts College Dental School, 1903; died October 30; age 78.

Thorn, Joshua R., Cleveland, Okla.; died September 29; age 92.

Toreson, Oscar T., Minneapolis; University of Minnesota School of Dentistry, 1923; died August 29; age 57.

Trook, Edwin M., Marion, Ind.; Chicago College of Dental Surgery, 1938; died October 29; age 46.

Vosper, Eurat D., Akron, Ohio; Ohio State University College of Dentistry, 1918; died October 25; age 66.

Wagmeister, Maurice S., East Peoria, Ill.; Loyola University School of Dentistry, Chicago College of Dental Surgery, 1936; died November 7; age 48.

Wagner, Floyd N., Nazareth, Pa.; Temple University School of Dentistry, 1917; died October 17; age 65.

Walsh, Louis C., Omaha; Creighton University College of Dentistry, 1919; died October 17; age 63.

Walter, William R., Harrisburg, Pa.; University of Pennsylvania School of Dentistry, 1899; died October 24; age 80.

Walters, Francis M., Indianapolis; Indiana Dental College, 1915; died November 12; age 73.

Weir, Charles P., Indianapolis; Indiana Dental College, 1916; died October 26; age 64.

Whinery, Frank B., Iowa City, Iowa; University of Iowa College of Dentistry, 1909; died December 1; age 72.

White, David L., Sand Lake, N. Y.; Philadelphia Dental College, 1907; died November 22; age 73.

Whitman, Raymond W., Middletown, Ohio; Indiana University School of Dentistry, 1927; died November 22; age 63.

Wilkens, Leon A., Wabash, Ind.; Indiana Dental College, 1913; died April 2; age 72.

Williams, Fred H., Shelby, Ohio; Ohio College of Dental Surgery, University of Cincinnati, 1903; died September 26; age 80.

Williams, Jesse L., Jacksonville, Fla.; Atlanta Dental College, 1911; died November 8; age 72.

Willoughby, Cyril D., Los Angeles; University of Southern California, 1923; died October 25; age 60.

Wilson, John F., Chicago; University of Illinois College of Dentistry, 1917; died November 14; age 63.

Winter, John E., Martinsville, Ind.; Indiana Dental College, 1904; died October 22; age 76.

Wisan, Jacob M., Philadelphia; New York College of Dentistry, 1918; died October 4; age 62.

Wood, Harry C., Berlin, Wis.; Northwestern University Dental School, 1898; died September 10; age 84.

Woodard, Charles H., Chicago; Meharry Medical College School of Dentistry, 1923; died November 13; age 55.

Worrell, K. G., Macomb, Ill.; Western Reserve University School of Dentistry, 1903; died October 15; age 79.

Wrigglesworth, Frank B., Eau Claire, Wis.; Milwaukee Medical College Dental Department, 1905; died October 13; age 74.

Wrightsman, Edward F., Springfield, Mo.; Washington University School of Dentistry, St. Louis, 1928; died August 19; age 53.

Yelland, A. Spencer, San Francisco; College of Physicians and Surgeons, 1911; died November; age 75.

Young, William Crawford, Rockford, Mich.; Detroit College of Medicine, Department of Dental Surgery, 1909; died October 3; age 73.

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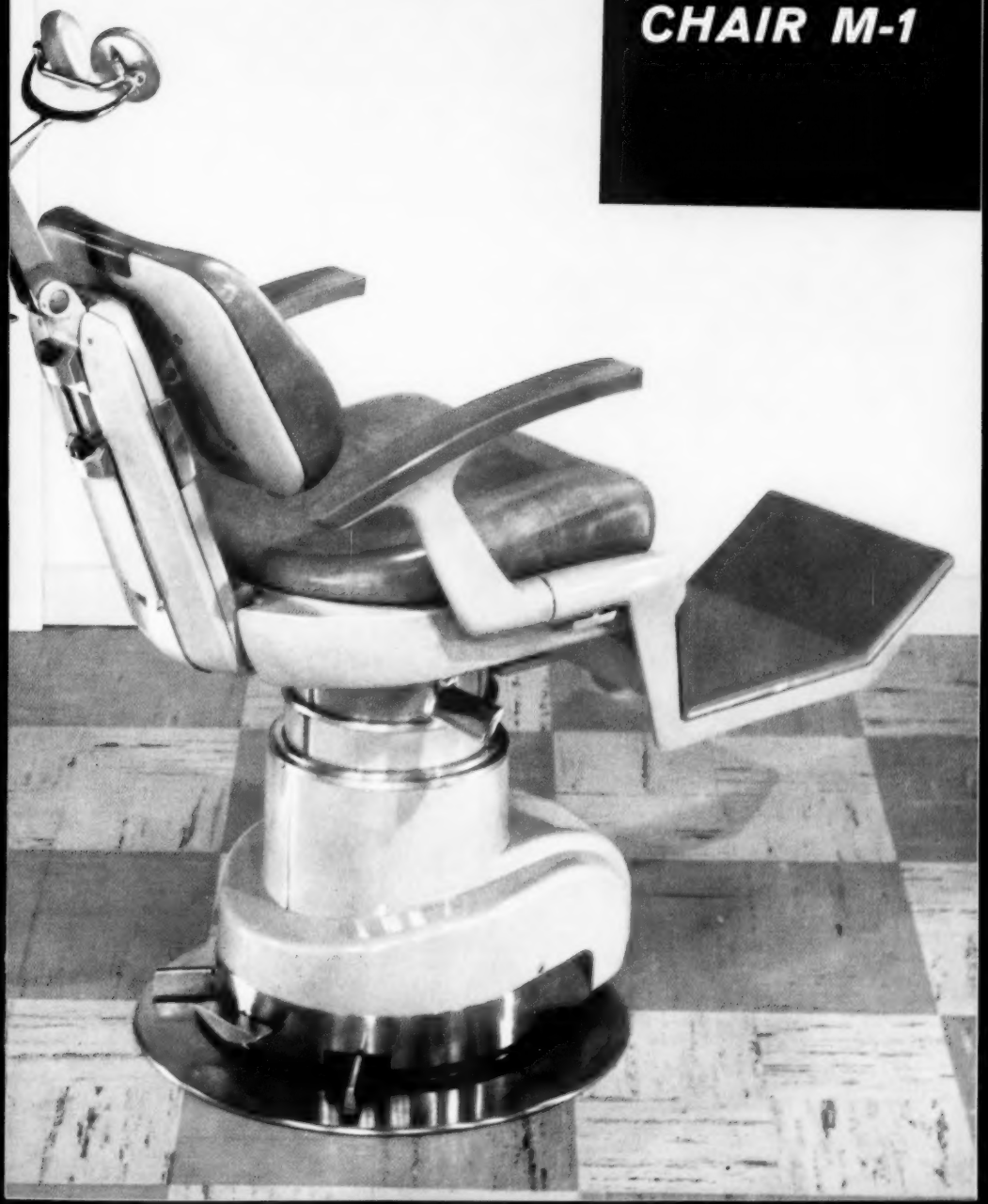

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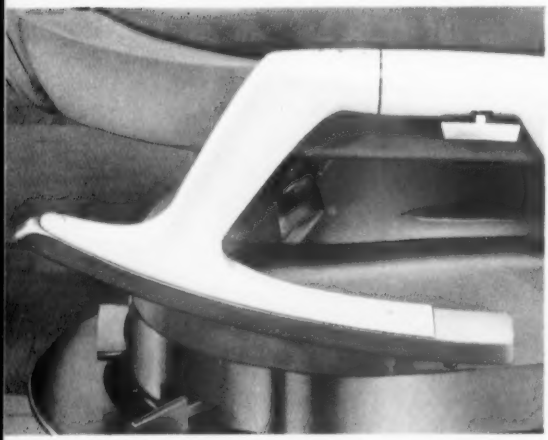

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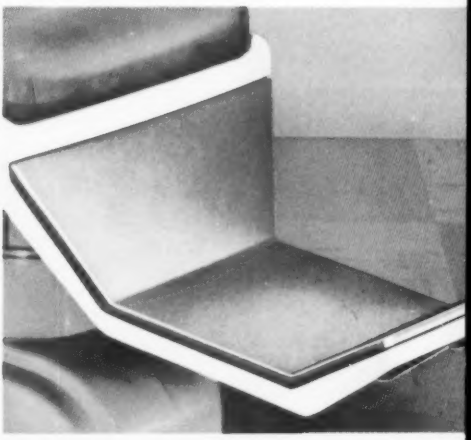

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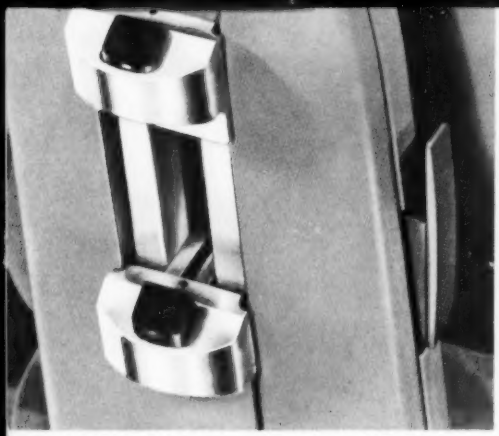

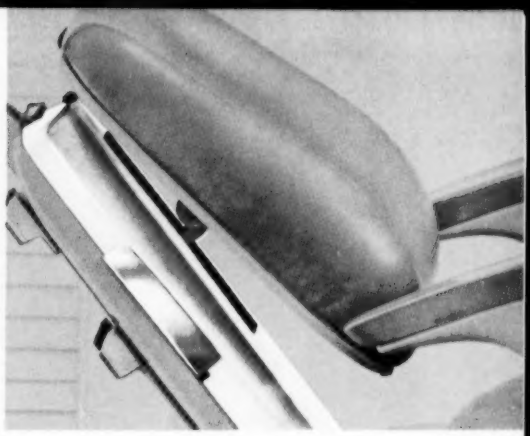

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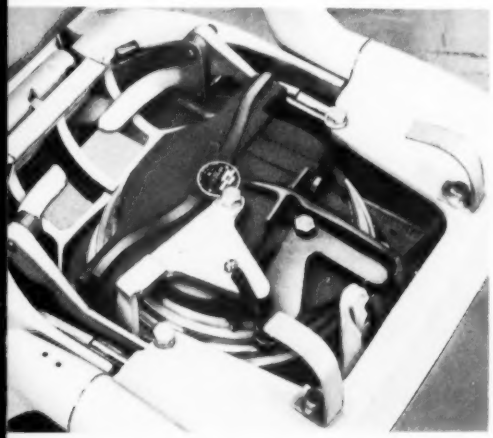

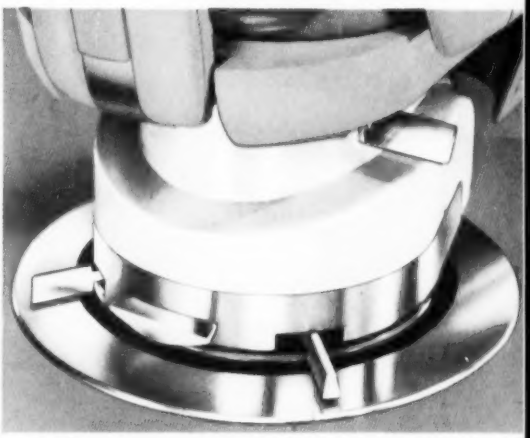

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THE JOURNAL OF THE AMERICAN DENTAL ASSOCIATION
222 East Superior Street, Chicago 11, Illinois
WHitehall 4-6730

LON W. MORREY, *Editor* JOHN E. RUSH, *Business Manager*

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One-Hundredth Annual Session	September 14-18, 1959	New York
One-Hundred and First Annual Session	October 17-20, 1960	Los Angeles
One-Hundred and Second Annual Session	October 16-19, 1961	Philadelphia
One-Hundred and Third Annual Session	October 29-November 1, 1962	Miami Beach, Fla.
One-Hundred and Fourth Annual Session	October 14-17, 1963	Atlantic City, N. J.

MEETINGS OF CONSTITUENT SOCIETIES

State	*Date*	*Place*	*Secretary and Address*
Alabama	Apr. 19-22	Birmingham	C. R. Crook, Professional Center, Montgomery
Alaska	July 13-15	Anchorage	R. D. Livie, 500 K St., Anchorage
Arizona	May 6-9	Scottsdale	W. G. Burke, 15 E. Monroe St., Phoenix
Arkansas	Apr. 12-15	Little Rock	D. M. Hamm., Box 89, Clarksville
California	Apr. 20-22	San Francisco	W. J. Healy, 518 Sutter St., San Francisco 8
S. California	May 4-6	Los Angeles	S. M. Silverman, 903 Crenshaw Blvd., Los Angeles 19
Colorado	Oct. 4-7	Colorado Springs	G. H. Siersma, 724 Republic Bldg., Denver 2
Connecticut	May 13, 14	Hartford	E. S. Arnold, 37 Linnard Rd., W. Hartford
Delaware	June 12, 13	Wilmington	E. J. Truono, 1401 Gilpin Ave., Wilmington 6
Dist. of Columbia	Mar. 15-18	Washington	J. F. Keaveny, 1835 Eye St., N.W., Washington 6
Florida	May 17-20	Hollywood	R. P. Groom, 3127 Atlantic Blvd., Jacksonville
Georgia	Oct. 25-28	Atlanta	F. M. Butler, Jr., Bankers Insurance Bldg., Macon
Hawaii	June 14-18	Honolulu	J. H. Dawe, 810 N. Vineyard St., Honolulu
Idaho	June 22-24	McCall	J. R. Olesberg, 214 Third St., Coeur d'Alene
Illinois	May 11-13	Peoria	P. W. Clopper, 632 Jefferson Bldg., Peoria
Indiana	May 18-20	Indianapolis	W. R. Shoemaker, Citizens Bank Bldg., Anderson
Iowa	May 3-6	Des Moines	H. N. Hake, 639 Insurance Exchange Bldg., Des Moines
Kansas	Apr. 26-29	Topeka	F. A. Richmond, Brotherhood Bldg., Kansas City 1
Kentucky	Apr. 5-8	Louisville	A. B. Coxwell, Jr., 2208 Dundee Rd., Louisville 5
Louisiana	Apr. 1-4	Shreveport	J. S. Bernhard, 2515 Line Ave., Shreveport
Maine	June 18-20	Rockland	S. M. Gower, Box 27, Skowhegan
Maryland	May 3-6	Baltimore	C. L. Inman, Jr., Medical Arts Bldg., Baltimore
Massachusetts	May 3-6	Boston	H. E. Tingley, 12 Bay State Rd., Boston 15
Michigan	Apr. 20-22	Grand Rapids	F. Wertheimer, Michigan Dept. of Health, Lansing
Minnesota	Apr. 13-15	Minneapolis	C. V. E. Cassel, 2236 Marshall Ave., St. Paul 4
Mississippi	June 21-24	Biloxi	B. V. Cohen, Box 9981, Jackson 25

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Missouri	May 10-13	Springfield	E. D. Suggett, Merchants Bank Bldg., Jefferson City
Montana	May 7-9	Kalispell	R. C. Ritter, 28 N. Black St., Bozeman
Nebraska	Apr. 26-29	Lincoln	F. A. Pierson, Federal Securities Bldg., Lincoln
Nevada	May 10-12	Las Vegas	O. M. Seifert, 755 Ryland Ave., Reno
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New Jersey	May 12-15	Atlantic City	J. G. Carr, 407 Cooper St., Camden
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New York	May 10-13	Syracuse	C. A. Wilkie, 268 Ashland Pl., Brooklyn
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North Dakota	May 3-6	Grand Forks	J. H. Pfister, 419½ Dakota Ave., Wahpeton
Ohio	Oct. 25-28	Cleveland	E. G. Jones, 185 E. State St., Columbus
Oklahoma	Apr. 26-29	Tulsa	L. D. Wright, Osler Bldg., Oklahoma City
Oregon	Mar. 2-4	Portland	T. D. Holder, Selling Bldg., Portland
Panama C. Z.			G. E. Lilly, Box 29, Ft. Clayton
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Puerto Rico			J. E. Munoz, Box 9023, Santurce
Rhode Island			C. A. Spacagna, 117 Broadway, Providence
South Carolina	May 24-26	Charleston	J. E. Wallace, 1506 Gregg St., Columbia
South Dakota	May 31-June 2	Rapid City	R. E. Decker, Box 308, Parker
Tennessee	May 11-14	Nashville	K. P. Ezell, 116 N. Academy, Murfreesboro
Texas	May 3-6	San Antonio	C. A. McMurray, 3707 Gaston Ave., Dallas 10
Utah	May 21-23	Salt Lake City	R. C. Dalgleish, State Capitol Bldg., Salt Lake City
Vermont	June 26-28	Manchester	E. C. Woods, 36 Washington St., Rutland
Virginia	Apr. 8-11	Roanoke	W. T. McAfee, Colonial National Bank Bldg., Roanoke
Washington	Apr. 6-8	Seattle	G. D. Dore, Jr., 211 Medical Dental Bldg., Seattle 1
West Virginia	July 19-22	White Sulphur Springs	G. N. Casto, Jr., 710½ Lee St., Charleston
Wisconsin	Apr. 27-29	Milwaukee	C. J. Baumann, Jr., 606 W. Wisconsin Ave., Milwaukee
Wyoming	June 18-20	Moran	T. J. Drew, State Office Bldg., Cheyenne

MEETINGS OF STATE BOARDS OF DENTAL EXAMINERS

State	*Date*	*Place*	*Secretary and Address*
Alabama	June 24-27‡		W. L. Smith, 524 Chestnut St., Gadsden
Alaska	July 7-10*†	Anchorage	R. H. Williams, Box 2122, Juneau
Arizona	June 15‡		W. G. Biddulph, 1611 N. Second Ave., Glendale
Arkansas	June 15-19	Little Rock	G. Cone, 113 S. Pecan St., Osceola
California	June 22 July 27 Aug. 31	Los Angeles San Francisco San Francisco	D. R. Grant, 507 Polk St., San Francisco
Colorado	June 24-27	Denver	R. F. Gilmore, Republic Bldg., Denver 2
Connecticut			A. P. Delfini, 265 Church St., New Haven
Delaware			J. F. Maguire, 1200 N. Van Buren St., Wilmington
Dist. of Columbia			W. T. Birthright, 1835 Eye St., N.W., Washington
Florida	July 5-16*‡ July 6, 7†‡		R. P. Taylor, Jr., P. O. Box 2913, Jacksonville 3
Georgia	June 1-4*†	Atlanta	W. G. Brown, Blackshear
Hawaii			J. Y. Ing, James Campbell Bldg., Honolulu
Idaho	June 29-July 1‡		W. M. Smith, 305 Fort St., Boise
Illinois			W. A. McKee, Wood Bldg., Benton
Indiana	June 9-12*†	Indianapolis	C. A. Frech, Gary National Bank Bldg., Gary
Iowa	June 1-5*†	Iowa City	P. A. Hahn, Farmers & Merchants Bank Bldg., Burlington
Kansas	June 1-4‡		G. L. Teall, Box 71, Hiawatha
Kentucky	June 8-11*†	Louisville	J. J. Kelly, 102 W. Madison St., Franklin

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State	*Date*	*Place*	*Secretary and Address*
Louisiana			A. R. deNux, Marksville
Maine			A. S. Appleby, Box 260, Skowhegan
Maryland	June 8-10	Baltimore	W. D. Burton, 829 Park Ave., Baltimore 1
Massachusetts	June 1-5*‡ June 4, 5†‡		C. R. Williams, 70 Washington St., Salem
Michigan	June 7-13*†	Ann Arbor	J. L. Champagne, 4714 W. McNichols Rd., Detroit 21
Minnesota			E. A. Nelson, 2236 Marshall Ave., St. Paul 4 W
Mississippi	June 15-17‡		A. H. Richter, Jr., Aven Bldg., Greenwood
Missouri			R. R. Rhoades, Central Trust Bldg., Jefferson City
Montana			R. O. Betzner, 303 Power Block, Helena
Nebraska	June 8-13*		H. E. Weber, Stuart Bldg., Lincoln
Nevada	June 22	Reno	R. Whitehead, Box 1547, Reno
New Hampshire	June 18, 19* June 18†	Boston	S. G. Markos, 8 Renaud Ave., Dover
New Jersey	June 1, 2* June 2† June 11† June 12, 13* June 15, 16* June 16† June 24, 25* June 25†	Philadelphia Philadelphia Teaneck Trenton New York New York Philadelphia Philadelphia	C. J. Schweikhardt, 150 E. State St., Trenton
New Mexico	June 22-25	Santa Fe	G. D. Hastam, Box 1007, Clovis
New York	June 23-26* June 23, 24†	New York Albany Syracuse Buffalo Rochester	D. W. Beier, 23 S. Pearl St., Albany 7
North Carolina	June 22*†	Chapel Hill	J. H. Guion, Doctors Bldg., Charlotte 7
North Dakota	July 13-17	Fargo	G. F. Wirtz, Clinic Bldg., Mandan
Ohio	June 8-10* June 11-13* June 13† June 15, 16*† June 18-20*	Columbus Columbus Columbus Columbus Cleveland	D. E. Bowers, 322 E. State St., Columbus 15
Oklahoma	June 22-24* June 22, 24†	Oklahoma City	W. H. Stephens, Plaza Court Bldg., Oklahoma City
Oregon	June 8-11*†	Portland	F. L. Uttet, Pioneer Trust Bldg., Salem
Pennsylvania	Apr. 2, 3* May 25, 26* June 4, 5* June 4† June 17, 18† Nov. 30, Dec. 1* Dec. 2, 3* Dec. 2†	Philadelphia Pittsburgh Pittsburgh Philadelphia Pittsburgh Philadelphia Philadelphia Philadelphia Pittsburgh Philadelphia Pittsburgh Philadelphia Pittsburgh	P. Swanson, 8111 Jenkins Arcade, Pittsburgh
Puerto Rico			J. Mercado C., Comercio St. #452, San Juan
Rhode Island	Jan. 26, 27	Providence	F. M. Hackett, 267 Academy Ave., Providence
South Carolina			W. J. Brockington, 1508 Washington St., Columbia 1
South Dakota			H. T. Aker, Canton
Tennessee	June 18-19	Memphis	C. R. Aita, Bemis-Dillon Bldg., Nashville
Texas			R. T. Weber, Capital National Bank Bldg., Austin 16
Utah	June 22-27‡		R. W. Fishburn, 4 Professional Center, Brigham City
Vermont	June 22-24‡		P. M. Fitch, Newport
Virginia	June 8-13* June 10, 11†	Richmond	J. M. Hughes, Medical Arts Bldg., Richmond
Washington	June 22‡		T. W. James, 1612 Hewitt Ave., Everett
West Virginia	June 22-24‡		C. C. Cottrill, Box 111, Glen Rogers
Wisconsin	June 8-12*†	Milwaukee	S. F. Donovan, Tomah
Wyoming			E. E. Edwards, Bank of Commerce Bldg., Sheridan

**Dental examination. †Dental hygiene examination. ‡Write to secretary of dental examining board for information on locations of examinations. Most states require applications to be in 30 days prior to examination date.*

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MEETINGS OF OTHER ORGANIZATIONS

Name	*Date*	*Place*	*Secretary or Chairman and Address*
Academy of Denture Prosthetics	Apr. 12-17	Louisville, Ky.	W. L. Warburton, Medical Arts Bldg., Salt Lake City 11
American Academy of Dental Medicine	May 14-17	Atlantic City	W. I. Levine, 809 Cathedral St., Baltimore, Md.
American Academy of the History of Dentistry	Sept. 11	New York	M. B. Asbell, 25 Haddon Ave., Camden, N. J.
American Academy of Implant Dentures	Sept. 11-13	New York	A. N. Cranin, 2120 Ocean Ave., Brooklyn 29
American Academy of Oral Pathology	Apr. 17-19	Minneapolis	R. J. Gorlin, School of Dentistry, University of Minnesota, Minneapolis 14
American Academy of Oral Roentgenology	Sept. 12	New York	T. S. Grant, University of California Medical Center, San Francisco 22
American Academy of Pedodontics	Sept. 9-11	New York	W. E. Cody, 1325 E. 16th Ave., Denver
American Academy of Periodontology	Sept. 11-13	New York	C. E. Chamberlain, 1101 N. North St., Peoria, Ill.
American Association for Cleft Palate Rehabilitation	Apr. 30-May 2	Philadelphia	D. C. Spriestersbach, Dept. of Otolaryngology, University Hospitals, Iowa City
American Association of Dental Editors	Sept. 12	New York	S. Epstein, 260 Santa Clara Ave., San Francisco
American Association of Dental Examiners	Sept. 11, 12	New York	C. J. Schweikhardt, 150 E. State St., Trenton 8, N. J.
American Association of Dental Schools	Mar. 22-25	San Francisco	M. W. McCrea, University of Minnesota, School of Dentistry, Minneapolis 14
American Association of Industrial Dentists	Apr. 27-29	Chicago	E. R. Aston, Pennsylvania Dept. of Health, P. O. Box 90, Harrisburg, Pa.
American Association of Orthodontists	May 4-7	Detroit	E. E. Shepard, 8230 Forsyth Blvd., St. Louis
American Association of Public Health Dentists	Sept. 13	New York	C. L. Howell, 1330 W. Michigan St., Indianapolis
American Board of Oral Surgery	Apr. 2-6	Chicago	L. M. FitzGerald, Roshek Bldg., Dubuque, Iowa
American Board of Orthodontics	Apr. 27-May 2	Detroit	W. L. Wylie, University of California, The Medical Center, San Francisco
American Board of Pedodontics	Dec. 14-17	Chicago	R. L. Ireland, College of Dentistry, University of Nebraska, Lincoln 8, Neb.
American College of Dentists	Sept. 11-14	New York	O. W. Brandhorst, 4236 Lindell Blvd., St. Louis
American Dental Assistants Association	Sept. 14-18	New York	M. L. Martin, First National Bank Bldg., La Porte, Ind.
American Dental Assistants Certification Board	May 13-17 Oct. 14-18		D. Perry, 6729 Gamewell Rd., Jacksonville 11, Fla.
American Dental Hygienists' Association	Sept. 14-18	New York	M. E. Swanson, 410 E. Ohio St., Chicago
American Dental Society of Anesthesiology	Sept. 12, 13	New York	H. A. Sultz, 248 Linwood Ave., Buffalo
American Dental Society of Europe	July 5-8	Stockholm, Sweden	J. P. Molony, 110 Harley St., London W. 1, England
American Denture Society	Sept. 11, 12	New York	V. L. Steffel, College of Dentistry, Ohio State University, Columbus, Ohio
American Society for the Advancement of General Anesthesia in Dentistry	Mar. 23	New York	M. H. Feldman, 730 Fifth Ave., New York
American Society of Dentistry for Children	Sept. 11-13	New York	R. E. McDonald, School of Dentistry, Indiana University, 1121 W. Michigan St., Indianapolis
American Society of Oral Surgeons	Sept. 9-12	New York	D. C. Trexler, 840 N. Lake Shore Dr., Chicago 11
Ark-La-Tex Dental Congress	Aug. 17	Shreveport, La.	G. Poulos, State National Bank Bldg., Texarkana, Ark.
Association of American Women Dentists	Sept. 14	New York	G. Cramer, 99 W. Broadway, Salem, N. J.
Austrian Dental Congress	May 20-23	Graz, Austria	R. Trauner, Zahnklinik und Kieferstation Graz, Auenbruggerplatz 12 (Landeskrankenhaus), Austria

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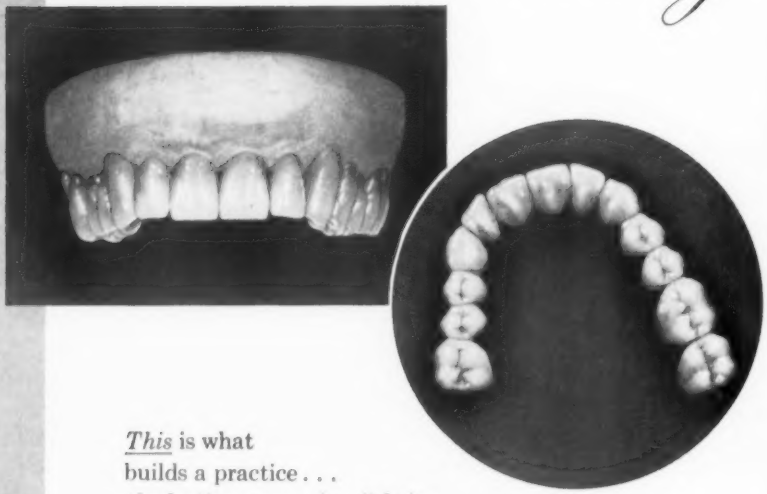

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Name	*Date*	*Place*	*Secretary or Chairman and Address*
Berkshire Conference (Tenth)	June 14-18	Lenox, Mass.	I. Glickman, Tufts University School of Dental Medicine, 136 Harrison Ave., Boston 11
British Dental Association	May 25-29	Torquay, England	Secretary, British Dental Association, 13 Hill St., Berkeley Square, London W. 1
Canadian Dental Association	June 21-24	Halifax	D. W. Gullett, 234 St. George St., Toronto 5, Canada
Chicago Dental Society		Chicago	K. S. Richardson, 30 N. Michigan Ave., Chicago
Cincinnati Dental Society	Mar. 22-24	Cincinnati	H. I. Greenberg, 910 Barry Lane, Cincinnati
Congress of Dental Science	May 6-10	Knokke-sur-Mer, Belgium	A. G. Vermeersch, 8, Place Foch, Louvain, Belgium
Council on Dental Education, Dental Aptitude Tests	Apr. 17, 18		S. Peterson, 222 E. Superior St., Chicago 11
Cuban National Dental Congress (Fifth)	Mar. 29-31	Havana	C. Funcia C., No. 353, Vedado, Havana, Cuba
European Orthodontic Society, Thirty-fifth Congress	July 6-11	Marseille, France	J. Antissier, 3, Bd Paul Doumer, Marseille, France
Federation Dentaire Internationale, 47th Annual Meeting	Sept. 12-19	New York	G. H. Leatherman, 35 Devonshire Place, London W.1, England
German Dental Congress (Fourteenth) and 100th Anniversary Meeting, German Society of Dentistry	Sept. 3-6	Berlin	R. Braun, Universitaetstrasse 73, Koeln-Lindenthal, Germany
Greater Philadelphia	Mar. 3-6	Philadelphia	M. Kohn, Sheraton Hotel, 17th St. and Pennsylvania Blvd., Philadelphia 3
International Academy of Oral Dynamics	Sept. 12, 13	New York	J. T. McSweeney, 140 E. 80th St., New York
International Association for Dental Research	Mar. 19-22	San Francisco	D. Y. Burrill, Northwestern University, 311 E. Chicago Ave., Chicago 11
International College of Dentists	Sept. 12, 13	New York	H. O. Westerdahl, 4829 Minnetonka Blvd., Minneapolis
Japan Dental Association	Apr. 26-28	Tokyo, Japan	T. Kashima, 6-4 Kudan Chiyoda-ku, Tokyo
National Association of Seventh-Day Adventist Dentists	Sept. 11-13	New York	G. H. Curtis, Box 101, Loma Linda, Calif.
National Board of Dental Examiners	Apr. 2, 3 Nov. 30, Dec. 1		G. J. Casey, 222 E. Superior St., Chicago 11
National Dental Association	Aug. 16-20	Cincinnati	E. N. Jackson, P.O. Box 197, Charlottesville, Va.
Northeastern Society of Orthodontists	Mar. 9, 10	New York	D. Mossberg, 36 Central Park S., New York
Northeastern Society of Periodontists	Apr. 10	New York	B. Wasserman, 730 Fifth Ave., New York 19
Northwest Academy of Dental Medicine	May 24-28	Sun Valley, Idaho	G. Underwood, Selling Bldg., Portland 5, Ore.
Philippine Dental Association	May 13-17	Manila	D. G. Santos, P.O. Box 1142, Manila
Scandinavian Dental Association (Thirty-second Congress)	July 2-4	Copenhagen, Denmark	Secretariat, Osterbrogade 4, Copenhagen, Denmark
Southeastern Academy of Prosthodontics	Mar. 14-15	Atlanta, Ga.	H. C. Parker, Liberty Life Building, Charlotte 2, N.C.
Southeastern Society of Oral Surgeons	May 7-9	Gatlinburg, Tenn.	P. B. Whittington, Jr., Medical Arts Bldg., Greensboro, N.C.
Southern Academy of Oral Surgery	Mar. 14, 15	Atlanta, Ga.	T. E. Braly, Volunteer Bldg., Chattanooga, Tenn.
Southern Academy of Periodontology	June 11-13	Gatlinburg, Tenn.	J. R. Owings, 7 Medical Ct., Greenville, S.C.
Southwest Society of Periodontists	May 1, 2	San Antonio, Texas	J. H. Swindle, Jr., P.O. Box 3096 Westview Station, Waco, Texas
Thomas P. Hinman Dental Clinic	Mar. 15-18	Atlanta, Ga.	H. W. Wallace, 1193 The By Way, N. E., Atlanta, Ga.
U.S.C. Dental Study Group of Mexico, Twelfth Annual Seminar	May 17-21	Acapulco, Mex.	C. J. Cornish, Paseo de la Reforma 510-601, Mexico 6, D. F.
Western Society of Periodontology	Mar. 15-17	Las Vegas, Nev.	E. F. Johnson, 250 E. Seventh St., Upland, Calif.

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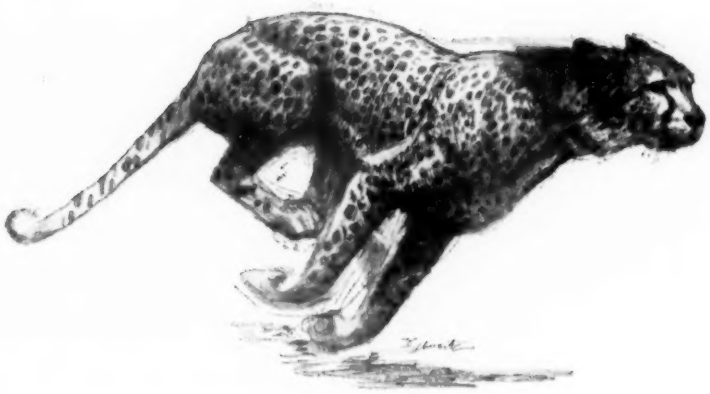

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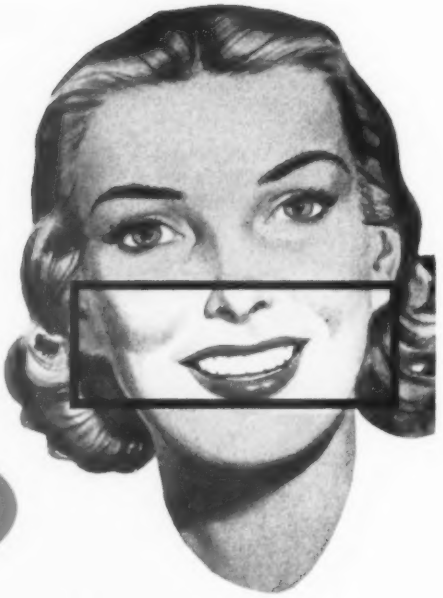

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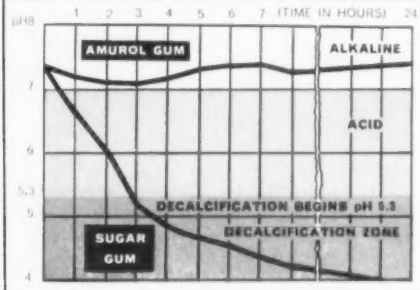

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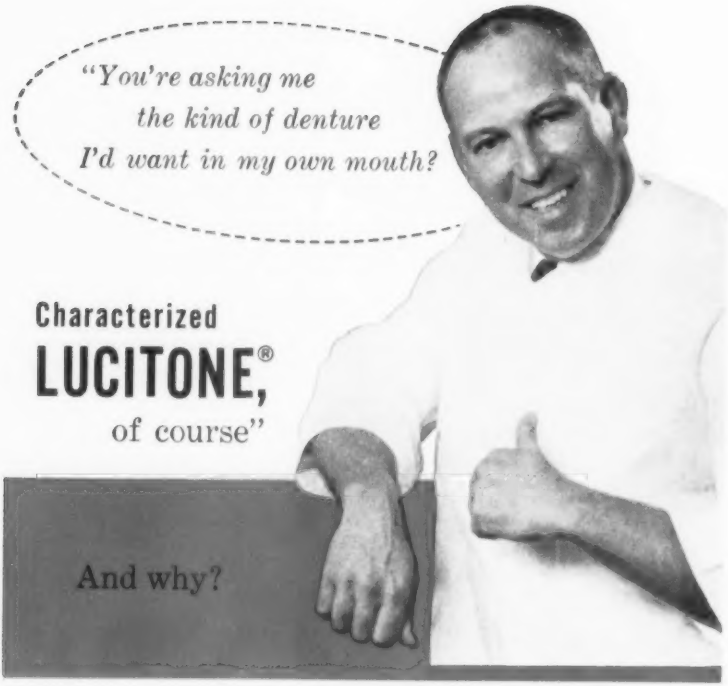

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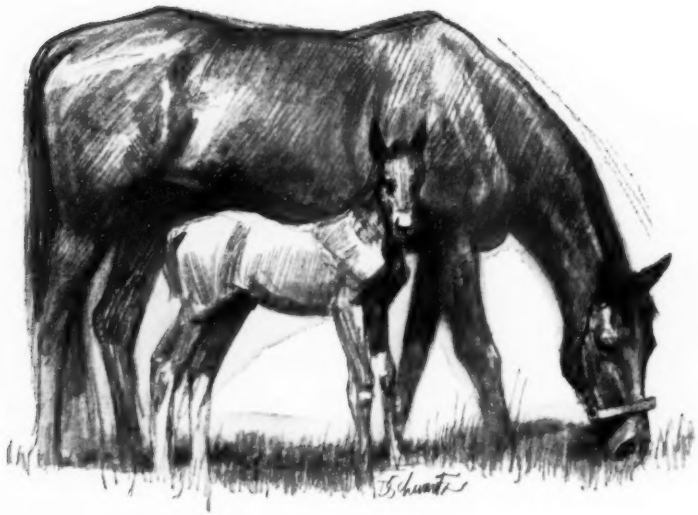

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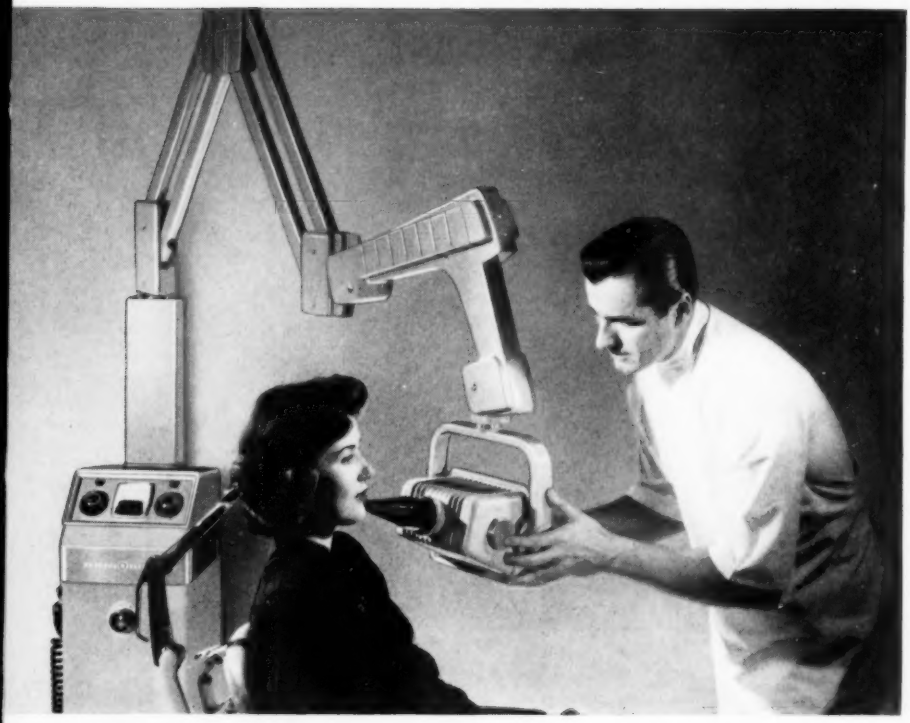

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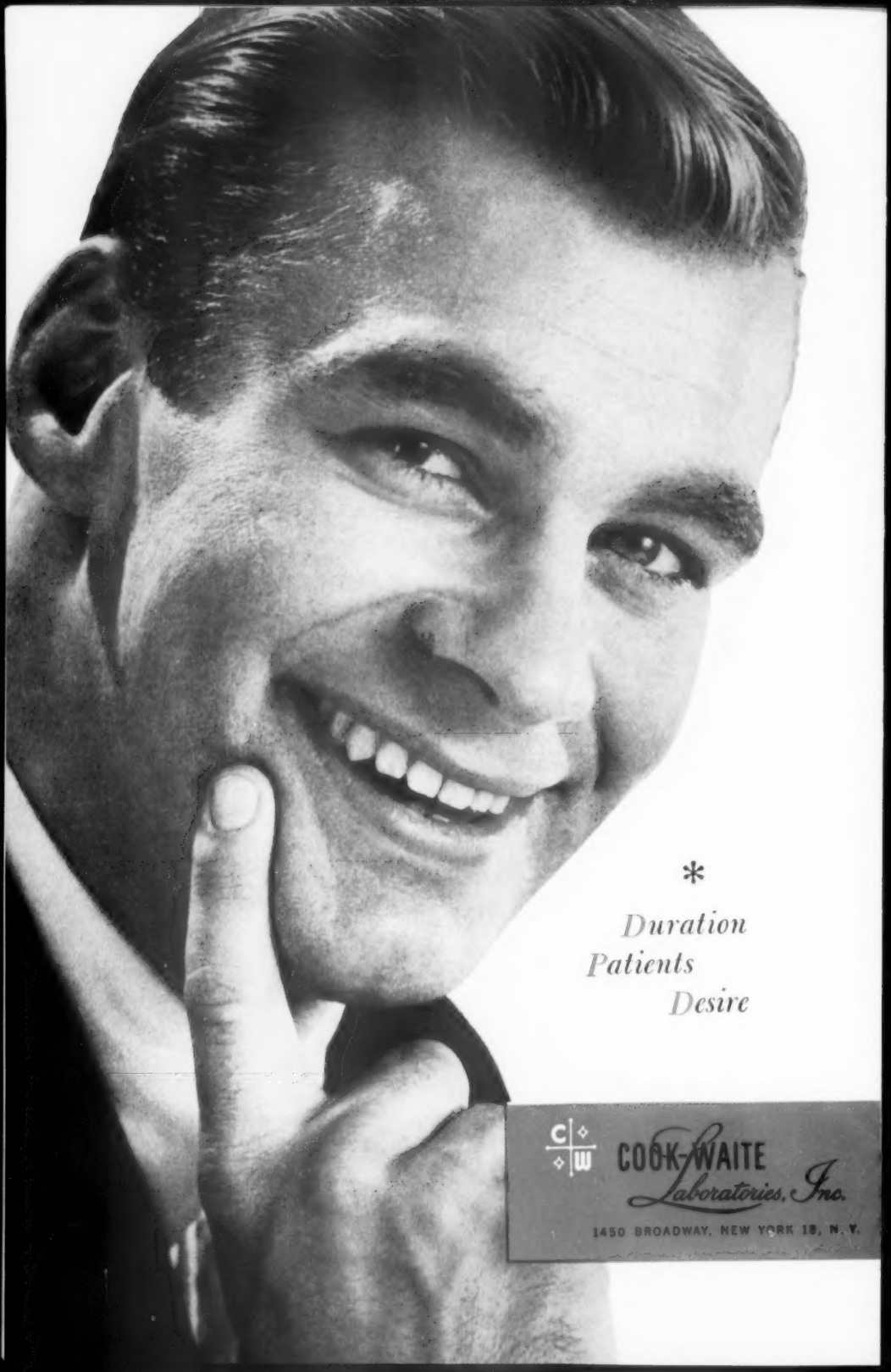
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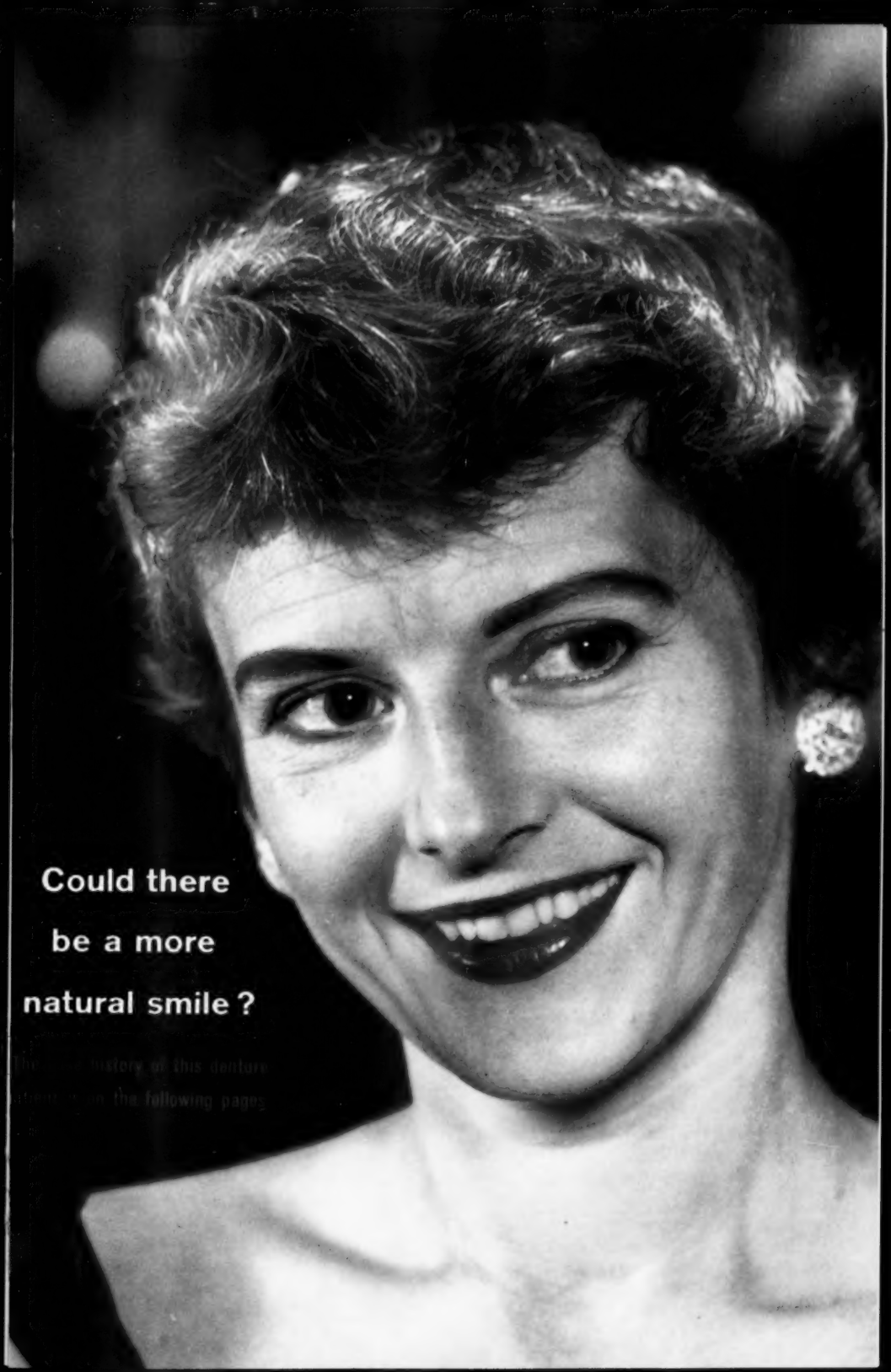
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ESTHETICS AND THE

An opportunity for the dentist to recreate, and even improve upon, the natural dentition.

BEFORE EXTRACTION

WITH DENTURE

In any immediate denture case the patient's natural tooth form, size and arrangement can be duplicated, when desirable. The dentist may decide, however, to modify certain characteristics or influences in the natural dentition to improve the over-all appearance of the patient.

This patient is an example of an immediate case which maintains the basic characteristics of the natural dentition with slight modifications for improved esthetics. These "before" and "after" photographs illustrate how this was accomplished. While retaining all the basic features of the natural tooth arrangement that characterized and individualized the patient's face, the dentist has contrived to subtly modify and soften the case. The effect has been to beautify the patient's mouth, improve her smile and make her seem noticeably younger.

Compare these two photographs. Note how at first glance the two tooth arrangements appear to be almost identical. The dominant centrals, the small, irregular laterals and the prominent cuspids of the natural mouth seem to be duplicated in the denture. Yet on closer study, it will be observed that the dentist has slightly softened the natural irregularities to develop the visual effect we associate with beautiful, natural teeth. The character and individuality of the natural arrangement, which gave identity and personality to the patient's face, have been retained. The denture achieves harmony with the feminine features and facial contour of the patient, and with her hair, eyes and complexion.

IMMEDIATE DENTURE CASE

THE NATURAL TEETH

THE DENTURE

These close-ups of the natural and artificial teeth illustrate how the dentist has modified and softened the arrangement to enhance the beauty of the patient's mouth. While the two centrals of the denture appear similar to their natural counterparts, they are slightly tapered toward the gingival to relieve the monotonous "boxiness." The irregular left lateral retains the characteristics of the natural lateral, but is rounded at the incisal for a softening effect.

The natural right lateral has a small, square appearance and tends to make the centrals appear overly large. In the denture, the right lateral is in better proportion to the centrals, and is an ovoid or softened feminine form. The cuspids retain their original and characterizing dominance, but have been rounded for a further softening effect.

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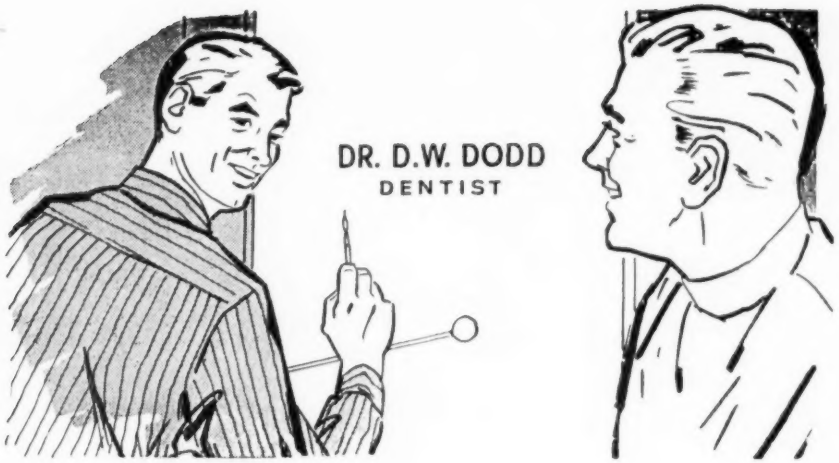

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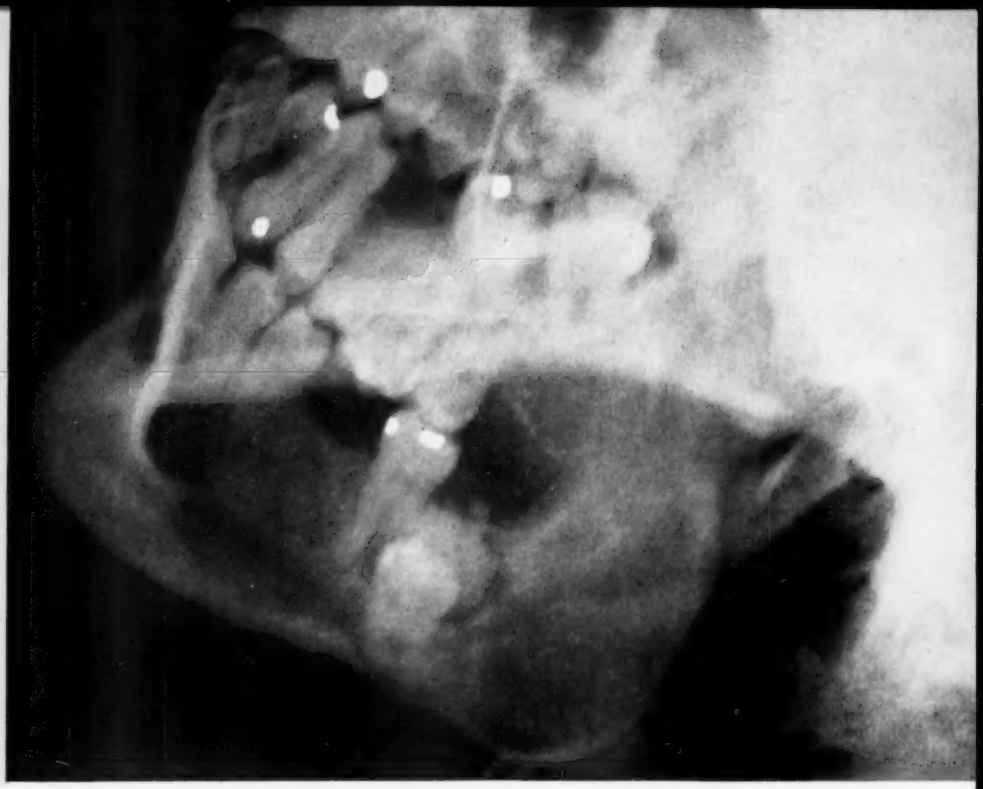

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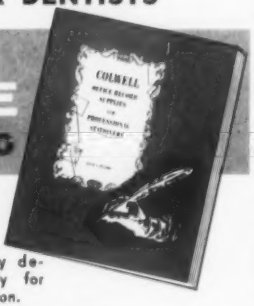

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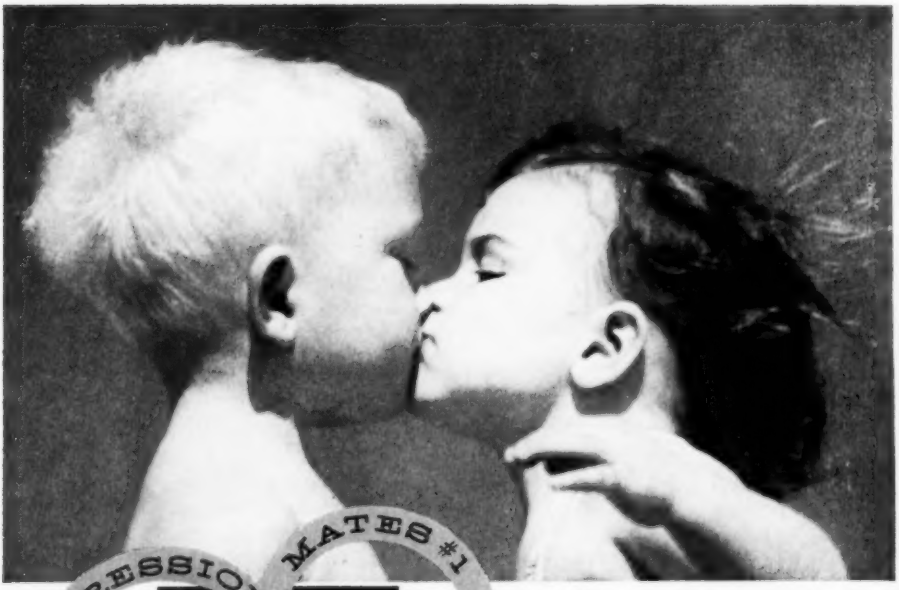

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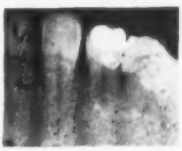

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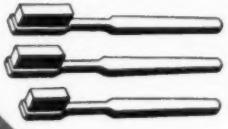

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During the past few years RPM speeds have been increased from regular to high, super high and ultra high. The question is "What is high?" The term RPM denotes the rotational speed of the turbine shaft when running free. It does not reflect the RPM of the cutting tool while in contact with the tooth or the peripheral speed of the various cutting tools. At recent dental meetings leading research clinicians pointed out that a stated free running high RPM was practically meaningless if the contact RPM was a fraction of the free running speed.

DOCTOR, DO YOU USE DIAMOND TOOLS?

Research has also proven that the diamond is the most effective tool tolerated by the tooth for cutting enamel structure. The Turbo-Jet (water turbine) with its engineered torque, gives a constant contact rotational speed of 50,000 RPM permitting the most effective use of diamond tools in sizes and shapes required for all tooth preparations. Carbide burs can be used to refine line angles in dentine. The constant application of the instrument on the tooth during cutting is very important as it gives the operator tactical perception, a basic requirement.

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FULL INSTRUMENTATION — Turbo-Jet's engineered Torque gives complete tactile control — permits the use of Burs, all Cylinders, Discs and Wheels for restorative dentistry.

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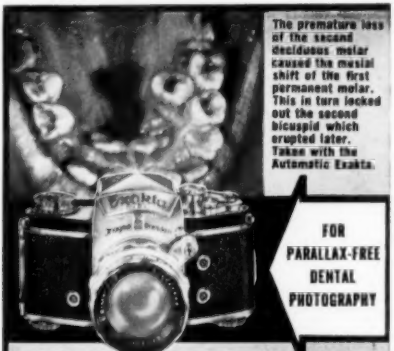

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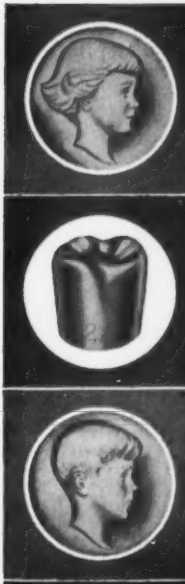

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CALIFORNIA—Carmel. For sale. General practice established 28 years. Owner retiring. Very suitable for older man. New owner assured of immediate income. Address A.D.A. Box No. 274.

•

CALIFORNIA—East side Compton. Now available. Dental suite. Established location in growing community. Reasonable rent. Write to Mrs. F. Armstrong, 445 S. Santa Fe Ave., Compton, Calif., or call NEwmark 5-8101.

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CALIFORNIA—For lease. Modern dental suite. Share reception room with physician. Located at 1339 W. Willow St., Long Beach. Contact Dr. Philip W. Reames, 1230 Carson St., Long Beach or call GArfield 4-8577.

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CALIFORNIA—Los Angeles area. For sale. Three-chair office. Owner will retire after introducing purchaser. Address A.D.A. Box No. 320.

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CALIFORNIA—University town of Palo Alto. For lease. Orthodontist's or oral surgeon's suite. New building to be completed September 1959. Will have three established general dentists. Tenant can design own office now. Six other general dentists and three physicians in immediate area, no orthodontist. Near schools. Address A.D.A. Box No. 300.

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CONNECTICUT—For sale. Three-chair modern, general practice dental office in air conditioned building. $10,000; terms. Dentist age 47, will stay with buyer for six months and share expenses, refer patients and then retire to Florida. Address A.D.A. Box No. 534.

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FLORIDA—For rent. Ample space for Florida licensed dentist. Modern air conditioned building, three operating rooms. Adjacent to busy general practitioner (M.D.). Off-street parking. Established location. Prosperous community. Busy practice assured from start. For details call CY 6-6921 or write Allen Shepard, M.D., 638 United St., Key West, Fla.

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ILLINOIS—For sale. Growing practice established for five years. Two-chair air conditioned office. Owner leaving for California. Contact Dr. A. J. McGreal, 211½ E. Broadway, Monmouth, Ill.

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INDIANA — For sale. Two-chair fully equipped (including x-ray) three-room office attached to modern seven room house. Two-car garage. Practice established 25 years. Small west central Indiana county seat town. No other dentist. Deep freeze, all draperies and part of furniture included. $10,000. Address A.D.A. Box No. 190.

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MASSACHUSETTS—Selling my $30,000 gross one-man, two-chair dental practice plus 12 room house (office attached). Ideally located in beautiful residential town ten miles north of Boston. Wonderful opportunity to secure successful practice plus lovely furnished home. Address A.D.A. Box No. 324.

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NEVADA—Las Vegas. For lease. Attention: Oral surgeons, orthodontists, periodontists and pedodontists. Attractive ground floor dental building equipped with three chairs, five ton York air conditioning unit, offering 1,200 sq. ft., with off-street parking. Las Vegas has a population of 50,000; drawing area in Clark County of 100,000. Only one oral surgeon and one orthodontist. No periodontist or pedodontist. Las Vegans are educated to good dentistry and are well able to afford it as income per capita is second to none. Address A.D.A. Box No. 277.

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OKLAHOMA—Tulsa. Dental suite, two operating rooms, reception room and office in new building, nice area. Large parking lot. Clinic has two established physicians and children's dentist. Address A.D.A. Box No. 330.

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PENNSYLVANIA—For sale. One of the most completely equipped and best located dental offices in Harrisburg. Two fully equipped operatories, business office, reception room, laboratory, dark room and lavatory. Address A.D.A. Box No. 331.

OPPORTUNITIES AVAILABLE

CALIFORNIA—Los Angeles oral surgeon needs associate with at least one year formal training including fundamental knowledge of general anesthesia. Give age, background, military service and State Board position first letter. Will hold opening for reasonable time if desired. Replies confidential. Address A.D.A. Box No. 310.

FLORIDA — Position open. Three-chair, modern air conditioned office. Neighborhood practice. Permanent association or partnership. Address Dr. J. Lytton, 12297 N. W. 7th Ave., Miami, Fla.

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ILLINOIS — Wanted pedodontist. Well trained, young, personable. No competition. 80,000 population. New building, 16 physicians, all specialties. Share suite with oral surgeon. Fine opportunity for rehabilitation work under general anesthesia. Minimum investment. Address A.D.A. Box No. 319.

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ILLINOIS—Community of 5,000 has no dentist. Unusual opportunity for young dentist. Two-chair office established 25 years. Rent very reasonable. Friendly people. Address Morse P. Hill, Carrier Mills Lion's Club, Carrier Mills, Ill.

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KENTUCKY—Orthodontist wanted for association in orthodontic practice in growing area. Please give details of training, treatment methods followed, age and type of association desired. Address A.D.A. Box No. 333.

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MONTANA—Wanted, Dentist in town of 2,000 population. Must be licensed to practice in Montana. Farming, ranching and oil producing northeastern Montana. Excellent gross income assured. Need is urgent as no other practicing dentist for some distance. Office space available. For further particulars please write to Secretary, Chamber of Commerce, Poplar, Mont.

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WASHINGTON—Foreign missionary work. Excellent opportunity for qualified men in all parts of the world. For details apply to The Missionary Dentist, Seattle 33, Wash.

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CALIFORNIA—California licensed oral surgeon desires association with oral surgeon in San Francisco bay area. One year postgraduate training, four years association with outstanding northwest oral surgeon. References. Married. Age 41. Address A.D.A. Box No. 336.

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California licensed dentist, graduate 1951, veteran, desires overseas employment with private company or government. Address A.D.A. Box No. 338.

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CONNECTICUT—Active practice wanted. Cash to invest. Write details. Address A.D.A. Box No. 339.

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Florida licensed dentist, 1951 graduate, rotating internship, wishes to rent, associate or buy busy practice in south Florida. Give pertinent details in first letter. Address A.D.A. Box No. 341.

•

ILLINOIS—1956 graduate, 27, family, rotating internship, completing service obligation July 1959. Desires association with established general practitioner in Chicago or suburban area. Address A.D.A. Box No. 340.

•

INDIANA—Recent graduate, married, two children. Desires association in ethical practice in central or northern Indiana. Address A.D.A. Box No. 342.

1957 Loyola graduate desires location to establish private practice in southern Louisiana. Will also consider association, full or part-time. Military service will be completed July 1959. Address A.D.A. Box No. 343.

•

MARYLAND—1955 graduate, military service completed, would like association with view to purchase in or near Washington or Baltimore. One year general practice experience. Address A.D.A. Box No. 366.

•

MASSACHUSETTS—1957 graduate, licensed. Desires association in general practice beginning July 1959. Married. Two years' experience in general dentistry while in service. Address A.D.A. Box No. 345.

•

Minnesota graduate 1954, age 30, married wishes association or participation with group practice in or near Twin Cities. Address A.D.A. Box No. 347.

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NEW JERSEY—Dentist, military service completed, one year general practice experience seeks association or opportunity to purchase practice in New Jersey. Address A.D.A. Box No. 367.

•

NEW YORK—New Jersey licensed dentist completing military service August, desires high quality general practice or desirable location in northern New Jersey, Westchester or Long Island. Address Dr. C. D. Stich, 122 Kenville Rd., Buffalo 15, N.Y.

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NEW YORK—1957 University of Pennsylvania graduate, completing service obligation June 1959, desires association or employment in practice in Westchester area. Also interested in purchase or association leading to purchase. Address A.D.A. Box No. 348.

•

New York association wanted in periodontics with group or practitioner. Mature, conscientious. Eventual partnership or purchase. Address A.D.A. Box No. 349.

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Exceptionally well trained, experienced, young dentist seeks opportunity to associate or enter partnership in high level practice in Westchester, Fairfield County or mid-Manhattan. Address A.D.A. Box No. 350.

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OHIO—Oral surgeon desires association leading to partnership or purchase. Ohio licensed, three years' Board approved postgraduate training in oral surgery with extensive general anesthesia experience; age 32, veteran. Available immediately. Address A.D.A. Box No. 369.

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Pennsylvania licensed dentist, hospital trained in anesthesia, desires association with oral surgeon or busy general practitioner; 20 years' experience in dental anesthesia. Can furnish all anesthesia equipment, if desired. Address A.D.A. Box No. 351.

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Oral surgeon, age 31, married, Navy veteran, four years' postgraduate training including general anesthesia, desires association, partnership or teaching position in oral surgery. Address A.D.A. Box No. 352.

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Anesthesiologist, physician, class A, fully trained and experienced, available for dental anesthesia on itinerant and scheduled appointment basis anywhere in New England area. Personal discussion concerning anesthesia needs with interested dentists invited. Address A.D.A. Box No. 296.

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Dentist, married, age 36, 12 years' private practice, desires position in industry, research or hospital. Will consider promotional or sales employment allied to dental or medical field. Address A.D.A. Box No. 355.

•

Oral surgeon, age 40, completing Board qualification. Experienced in surgery, anesthesia and teaching. Desires association with early partnership or group practice in expanding community. Ohio Boards. Will consider any good location. Address A.D.A. Box No. 356.

•

Oral surgeon wants to associate with established oral surgeon leading to partnership. Completed three years' American Dental Association approved hospital training and postgraduate course. Have New York and national Boards, will take others. Military service completed. Age 32. Address A.D.A. Box No. 370.

•

Wisconsin licensed dentist, three years' Air Force, 12 years' general practice, married, family, desires industrial, governmental or hospital position. Will consider foreign service. Address A.D.A. Box No. 357.

•

Wanted association. Have 18 years' experience (civilian and army) or will accept hospital, industrial, institutional or governmental position in any state. Very well trained. Address A.D.A. Box No. 358.

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The occlusal rest

FIG. A

FIG. B

FIG. C

Occlusal rests supply a substantial portion of the support required for the clasp type of partial denture. They must resist the heavy masticatory load and yet maintain the correct clasp-to-tooth relationship. Sometimes no rest seat is prepared in the abutment tooth, leaving only room enough for a thin rest which soon breaks (Fig. A).

The rest preparation in the abutment tooth should be definite but not box-shaped as in Fig. B. A sharp angle at the marginal ridge produces a corresponding angle in the casting that may cause fracture.

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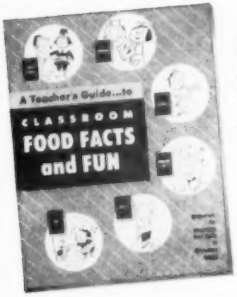

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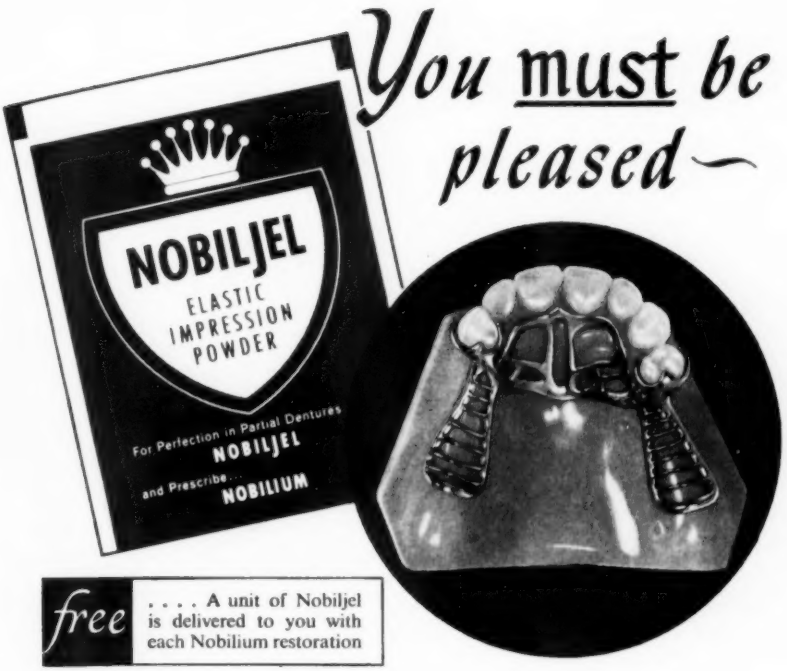

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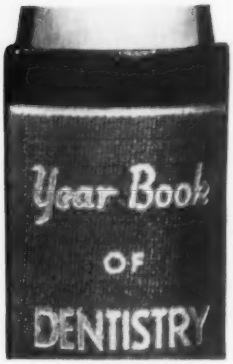

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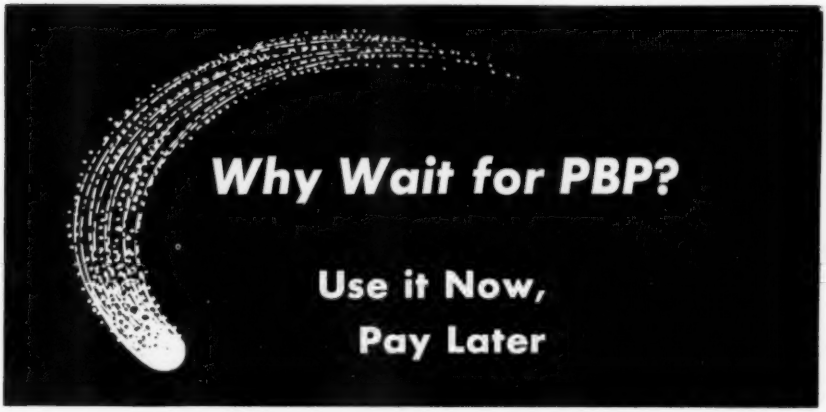

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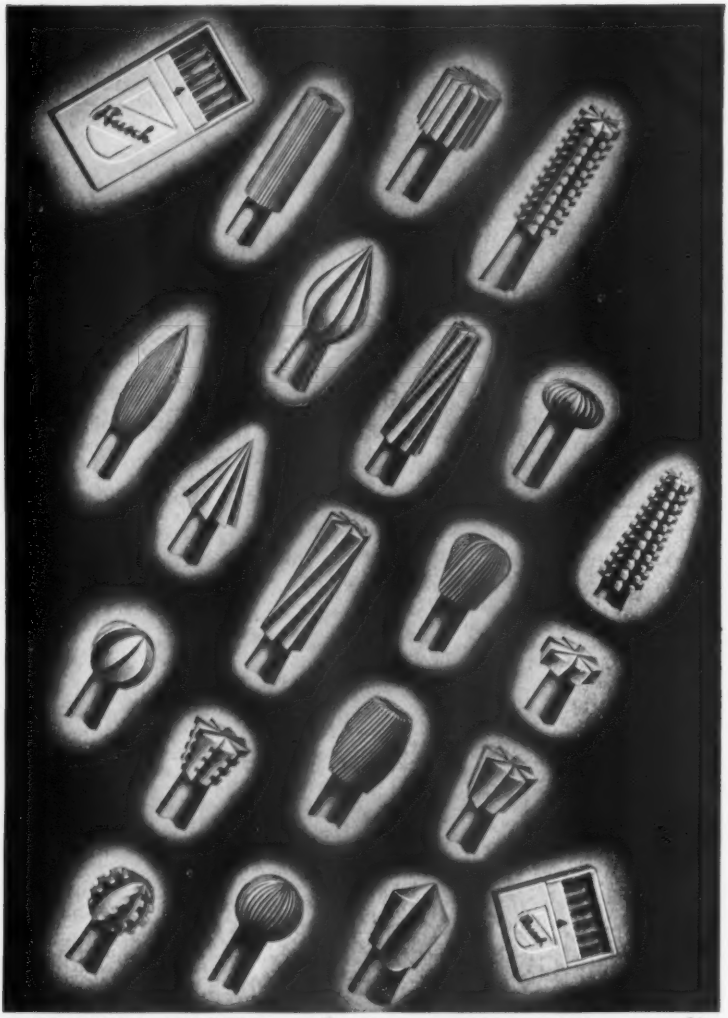

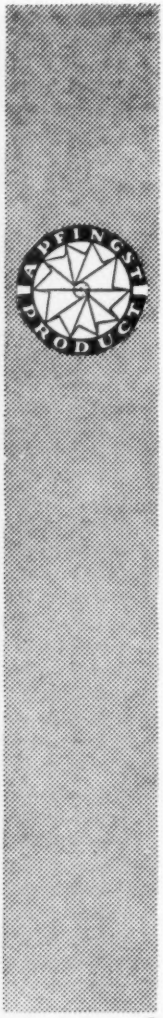

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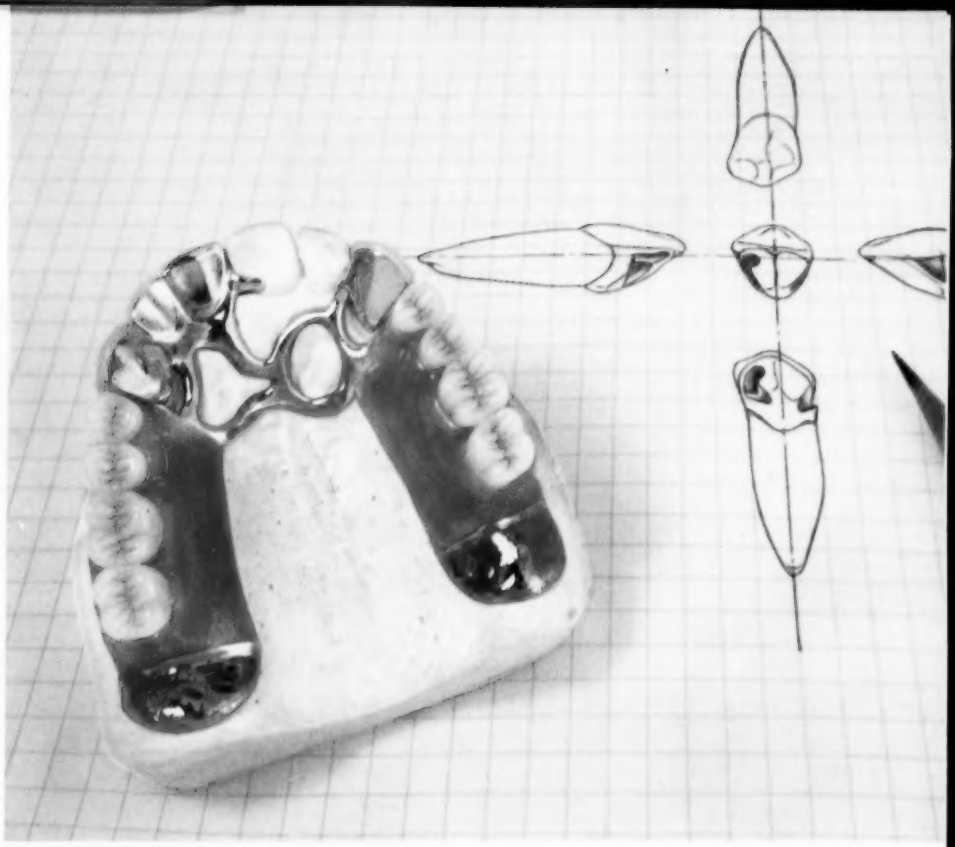

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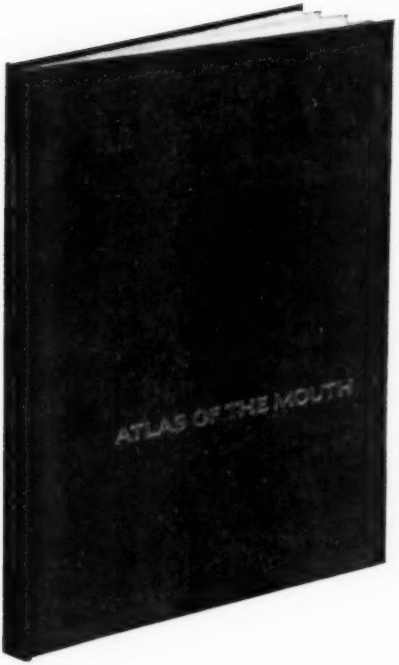

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